CALIFORNIA

OIL WORLD

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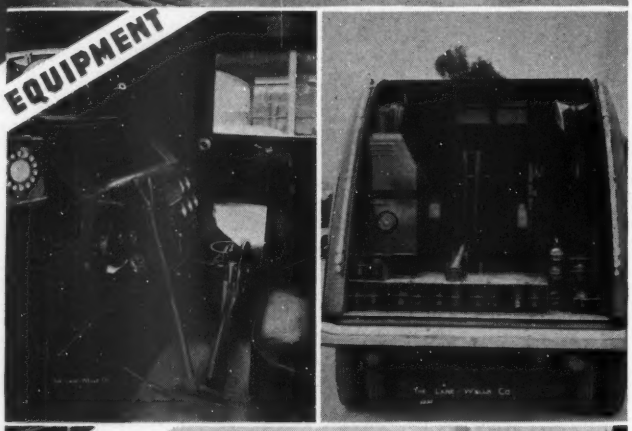

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CALIFORNIA
OIL WORLD
and Petroleum Industry

NOVEMBER 5, 1936
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THE WORLD'S FIRST OIL TRADE PUBLICATION

IN THIS ISSUE

FEATURE ARTICLES

Page

C. N. G. A. Program 5
Gasoline Plant Fire Hazards 6
Gas Compressor Variables 9
Fractional Analysis Problems 20

GENERAL NEWS

Taxpayers Concerned With 1936 Revenue Act 4
Shell Completes Second Well at Ten Sections 13
November Crude Quota 13
Walnut Wildcat Starts 14
Petrol Plans Development at Redondo 14
California Production 16
Drilling Report 16
West Long Beach Undergoes Leasing Campaign 18
California Field Stocks Off 19
Continental Earnings Up 22
Richfield Shows Profit 22
Refineries Cut September Runs 26
September Index Numbers 27
Sunset Seeks Added Production 30
Tankers Reported Unaffected by Marine Strike 31

EQUIPMENT NEWS 29

Coming Events

Nov. 5—C.N.G.A. Regular Fall Meeting, Biltmore Hotel.

Nov. 5—Special train Leaves Los Angeles for A. P. I. annual meeting in Chicago.

Nov. 5-6—A. A. P. G. meeting, Pacific Section, Biltmore Hotel, Los Angeles.

Nov. 9-12—American Petroleum Institute 17th Annual meeting. Stevens Hotel, Chicago.

Nov. 20—Mid-Continent Oil & Gas Assn. Annual Membership Meeting, Tulsa, Oklahoma.

Nov. 30—Independent Petroleum Association of America, Seventh Annual Meeting, Oklahoma Biltmore Hotel, Oklahoma City, Okla.

Dec. 4—Mid-Continent Oil & Gas Association, Texas Division, Houston, Texas.

Dec. 18—Tentative date for annual Christmas Jinks of Calif. Oil & Gas Assn. Wildcat Committee. The place, Biltmore Hotel, L. A. The Wildcats promise better and funnier entertainment than ever, including an original play.

PETROLEUM PUBLISHERS, INC.
Petroleum Securities Building
Los Angeles, California

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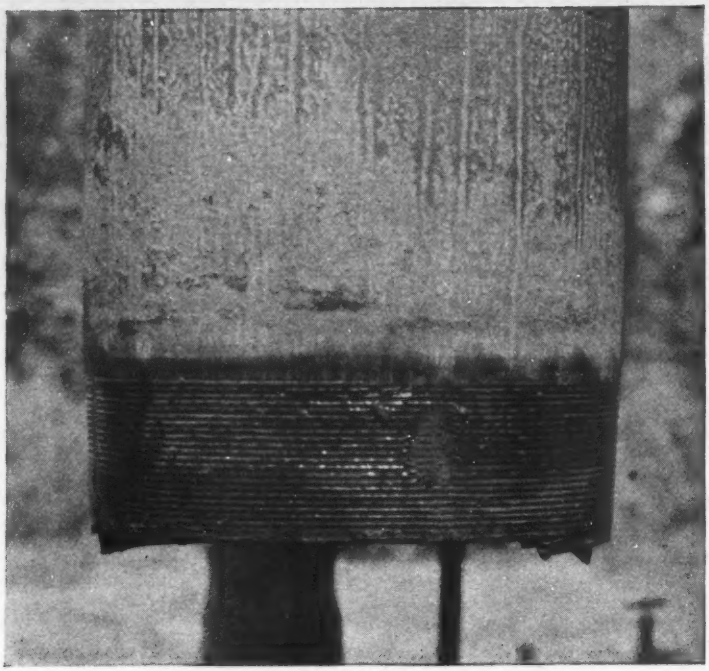

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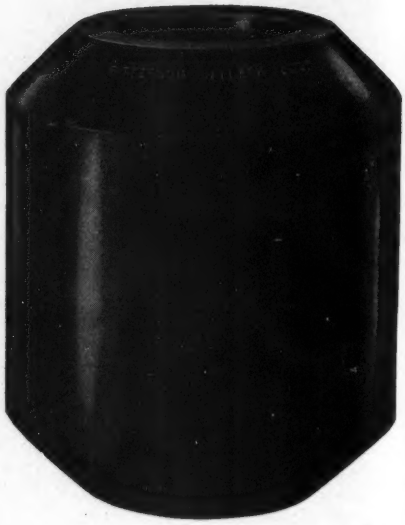

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CALIFORNIA
OIL WORLD
and Petroleum Industry

TODAY is the date of the fall meeting of the California Natural Gasoline Association, one of the several associations of the California oil industry whose efforts are devoted to the betterment of the industry by furnishing a meeting ground upon which methods, principles, and practices of those who compose the industry can be discussed and, by discussion and cooperation, can be improved to the benefit of the industry as a whole.

The present fall meeting, as in the past, will combine business with pleasure, the day being devoted to the presentation of papers upon different phases of the natural gasoline branch of the oil industry, and the evening to a banquet and entertainment.

The association was fostered by a group of men who, in 1925, saw that the technical problems facing natural gasoline plant operators could best be solved by cooperative activity on the part of all gasoline plant operators, rather than by individuals working separately and more or less in the dark as to what other members of the industry were working upon. As a result of the cooperation among individuals that has been made possible by the association, certain standards for technical procedure have been set up, and these standards are recognized by all who are engaged in the industry.

The association also provides, through its monthly meetings, a method whereby the members of the industry may meet and learn of the latest developments in the industry, and, more recently, by the admission of equipment manufacturers to the membership, may learn of the latest designs of equipment for the more efficient, more economical, and more satisfactory operation of the business. The element of cooperation between natural gasoline men on the one hand, and natural gasoline equipment manufacturers on the other, has led to the more rapid development of necessary equipment, simply through the opportunity given to the manufacturer to determine what was needed, whereupon he could proceed to build it. Further cooperation has been brought about between the California Natural Gasoline Association and the Southern California Meter Association and the Pacific Coast Gasoline Association, with the result that common problems have been more easily and expeditiously solved, to the benefit not only of the oil industry, but of other industries whose problems, at least in some respects and in some phases, are similar.

The association's active membership is open to anyone engaged in the natural gasoline, natural gas, and other branches of the oil industry, and to any one who manufactures equipment used in any branch of the oil industry. A sustaining membership is made up of any organization which has made a contribution to the funds of the association and an associate membership may be obtained by any one not falling into the classifications mentioned above.

These members, all of them working together, have developed standards of procedure for twelve phases of the natural gasoline business. The technical committee is constantly working to include other methods of procedure, with the ultimate aim that the business, as to its technical phases, will be conducted along the most efficient and economical lines possible. To that end, the association does and always will solicit, through its technical committee, suggestions and information as to investigations that should be carried on by the association for the benefit of the industry as a whole. The technical committee is at present engaged upon work which should soon lead to the issuance of bulletins on other problems, and with their acceptance by the executive committee of the association, new standards of procedure will be in effect for the industry.

The work of associations, as exemplified by the California Natural Gasoline Association, is a vital and fundamental part of conducting such a varied business as the oil industry. Support to the association should be given by all members of the industry who are in any way able to support it—and that this fact is recognized is best indicated by the present and ever-growing list of members of the association.

Individual Taxpayers Concerned With Section 105 Of Revenue Act Of 1936

(This is the third article of a series prepared for the Oil Producers Agency. The first two articles have appeared previously in the California Oil World).

By W. F. MALONEY,
(Partner, Nichols and Maloney, C.P.A.'s)

THE REVENUE ACT of 1936 revives an income tax feature with respect to the sale of oil and gas properties, or interests therein, which is of particular concern to individual taxpayers. However, it does not affect corporations. Under Section 105 of the Act, it is provided that:

> "In the case of a bona fide sale of any oil or gas property, or any interest therein, where the principal value of the property has been demonstrated by prospecting or exploration or discovery work done by the taxpayer, the portion of the tax imposed by section 12 attributable to such sale shall not exceed 30 per centum of the selling price of such property or interest."

The tax imposed by Section 12, which is referred to in Section 105, is the "surtax" levied upon the surtax net income of individuals at graduated rates from 4% to 75%, and is not applicable to corporations.

All of the Revenue Acts from 1918 to 1932, inclusive, contained such a limitation which applied to the sale of mines as well as oil and gas properties. However, this limitation was dropped by the 1934 Act. Under the 1918 Act the surtax attributable to such sales was limited to 20% of the selling price of the property. Under the 1921 Act the 20% limitation was continued for the year 1921, and was changed to 16% for the succeeding years until the limitation was dropped altogether by the 1934 Act.

The 1936 Act in reviving the limitation specifies that it pertains only to the sale of oil and gas properties or any interest therein and that the limitation of the tax is to be 30% of the selling price of the properties instead of 16%.

No regulations have yet been issued by the Treasury Department with respect to the computation of this surtax limitation under the Revenue Act of 1936. For the purposes of this discussion, it is assumed that such regulations when issued will follow in principle Article 511 of Regulation 77 (Revenue Act of 1932), and that in applying the limitation the surtax would be first computed in the ordinary way including in income the net gain from the sale of the oil and gas properties or interest therein. Then the ratio of such net gain to the individual taxpayer's total net income from all sources would be applied to the surtax thus computed, to determine that part of the surtax attributable to the sale of the oil and gas properties. If such part of the surtax (attributable to the sale of the oil and gas properties) exceeds 30% of the selling price, then the surtax would be reduced by the amount of the excess.

The question now arises, "Must the total net gain from the sale of oil and gas properties be included in net income, or, only that portion which would be recognized in the case of taxpayers, other than corporations, after applying the percentages limiting the gain or loss recognized upon the sale or exchange of a capital asset as set forth in Section 117 of the 1936 Act?"

No mention is found in the 1936 Act whcih would indicate that Section 117 with respect to sales of capital assets is not to be first considered. It is the opinion of this writer that the sale of the oil and gas property would constitute a sale of a capital asset on which only the recognized gain, as computed under Section 117, would be used on the face of the individual taxpayer's tax return in arriving at his total taxable net income.

It is well to reiterate that the limitation allowed under Section 105 applies only to the surtax rate imposed on individual taxpayers only and not to corporations. Also, it should be noted that there are no provisions in the present California Personal Income Tax Act which correspond to this section in the Federal Revenue Act of 1936. Therefore, unless the California Legislature enacts a similar provision with respect to the California Personal Income Tax Act and makes it retroactive to include such transactions for the current taxable year, the limitation allowed under the Federal Revenue Act of 1936 will not be allowed to individuals under the California Act.

Service Station Tax 36% Of Total Business

TAXES collected by the California service stations in 1935 were equivalent to 36.1 per cent of their total dollar volume of business!

A preliminary report issued by the U. S. Bureau of the Census places at $154,532,000 the total volume of business transacted by these 12,729 stations in 1935. Official tax records indicate that they collected $55,826,000 in taxes in the same period. Of this tax revenue, $39,971,000 represented state gasoline sales taxes and $15,855,000 represented the duplicating federal tax on gasoline and the federal tax on lubricating oil, all being collected from customers.

Although the stations had an average annual business of only $12,120 each, as compared with an average of $22,900 for retail outlets in general, the average station collected $4380 in taxes. This was equivalent to $2085 in taxes per employee, including active proprietors.

The census report further shows that employment in service stations increased 12.5% over 1933, as compared with an increase of 10.9% in general retail business. In 1935 the service stations provided employment for 26,776 workers, as compared with 23,808 in 1933, both totals including proprietors and firm members devoting full time to station work.

Service station payrolls increased to $16,702,000 in 1935, a gain of 30.8% over the $12,767,000 payroll of 1933. These figures do not take into consideration any compensation for the services of active proprietors and firm members. The 1935 payroll failed to keep abreast of taxes, however, being only 30% as large as the tax revenues the stations collected from their customers.

■ ■ ■

Hancock Reports Profit

The Hancock Oil Co. has issued a quarterly report for the three months ended Sept. 30 showing a net profit of $100,685.76. Gross operating income during the period was $1,477,180.29, from which $1,376,494.53 was subtracted for operating charges, intangible development costs, and depreciation, depletion and abandonments.

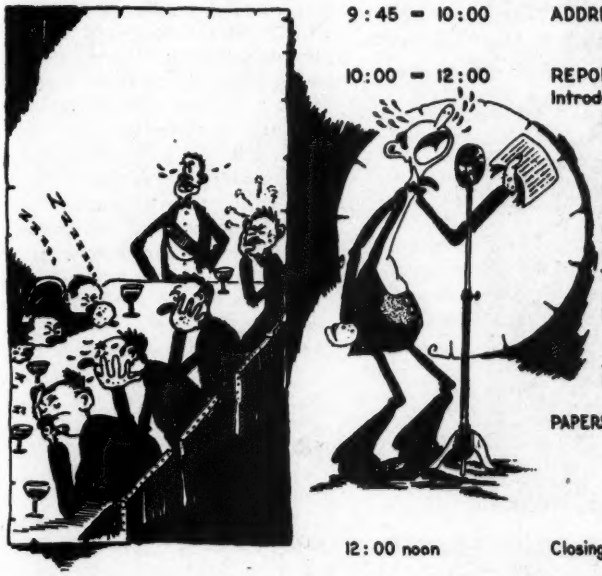
CALIF. NATURAL GASOLINE ASSN.

FALL MEETING ~ ~ ~ NOVEMBER 5TH 1936

BILTMORE HOTEL — LOS ANGELES, CALIF.

PROGRAM

MORNING SESSION



CHAIRMAN: Wm. Moeller, Jr.

9:30 a.m. — MEETING CALLED TO ORDER

9:30 – 9:45 — PRESIDENT'S ADDRESS ~~ R.D.Gibbs, President

9:45 – 10:00 — ADDRESS ~ ~ F.E.Foster, Managing Director, California Oil & Gas Association.

10:00 – 12:00 — REPORT ~~ Technical Committee
Introduction W.C. Dayhuff, Chairman
Introduction of individual chairmen;

a W.L.Cowan, Chairman, Gas Measurement Committee,
b F.N. Laird, Chairman, Fractional Analysis Committee,
c T.R.Beauchamp, Chairman, Gasoline Metering Committee,
d Warren Kraft, Chairman, Truck Gauging Committee,
e D.A. Smith, Chairman, Physical Constants Committee,
f H.J. Multer, Chairman, Charcoal Test Committee,
g H.A. Sting, Chairman, Sample Containers Committee,
h W. Shellshear, Chairman, Safety Committee,
i Frank Burt, Chairman, Liquefied Gas Committee,
j G.N. Hile, Chairman, Revisions to Bulletins Committee,
k Lyman Scheel, Chairman, Gas Engine & Compressor Comm.

PAPERS "SAFETY", N.C. Wells.

"COMPRESSORS", Lyman Scheel.

"LIQUEFIED GAS", Frank Burt.

12:00 noon — Closing Remarks by President R.D.Gibbs.

AFTERNOON SESSION

CHAIRMAN: J. C. Burks

2:00 p.m. — Opening Remarks by Chairman J.C.Burks, Vice-President.

2:00 – 3:00 — Address "COAST DEFENSE", Lieut. Colonel Oldfield, U.S.A.
~ DISCUSSION ~

3:00 – 4:00 — "POLYMERIZATION", M.W. Kellogg Company.
~ DISCUSSION ~

4:00 – 5:00 — "Influence of Automobile Design on the Use of Natural Gasoline", C.C.Moore, Jr. & Dr. R.I. Stirton.
~ DISCUSSION ~

CLUB ROOM FEATURES

5:00 – 7:00 — Music and Refreshments.

7:00 p.m. — **BANQUET & ENTERTAINMENT**
Gus Wetzel, Chairman Entertainment Committee.

PRICE OF BANQUET TICKETS $3.50

Gasoline Plant Fire Hazards

The author discusses the relative importance of design versus personal element in plant safety

By N. C. WELLS

WHICH IS MORE dangerous, the so-called "personal element," or design? This question is often asked of the gasoline plant operator by one who considers thousands of gallons of highly explosive material in the same light as gun powder. The average layman probably asks it because he realizes the obvious answer in the case of powder, "personal element." However, the explosive material in a gasoline plant, if properly confined in well designed pressure vessels and piping at all times, obeys certain laws and is not dangerous. This fact makes the answer less emphatic unless we complicate matters by calling all design a matter of "personal element" on the part of the designer. To avoid this issue, no distinction is made and both will be dealt with concurrently.

Type of Man for Operator

a. **Nervous man.** Pride in his ability to control his beasts of burden is an essential to confidence in himself on the part of an operator. The nervous operator frequently worries over the wrong thing. He is afraid of almost anything. If he cannot be cured by a little common sense, he is hopeless.

b. **Man of no fear.** This type of man is usually more easily cured, but the curing should be done in a hurry. Nothing phases him, such as throwing a steel wrench on a concrete floor immediately after successfully stopping a leak in a gasoline line. He has pride in a job well done; but what a finish his might be. Of course he has done this many times before and cannot understand what harm there is in it. If it is not too late, he should be made to understand.

c. Judgment. This is indeed the principal asset of a gasoline plant operator. When an unusual condition arises he must consider the possible hazard and weigh it against loss of production. If the man leans toward "safety first" he should be given consideration. The degree of such leaning, however, is highly important. Careful attention should be given to any situation that was, or might have been, serious, also to any situation that was not serious but was so considered by the man on duty. A thorough explanation of the hazards or lack of hazards involved should be passed on to the operating staff and, if possible, should be made a matter of permanent record.

To illustrate this point let us take a hypothetical case. A man on duty at night discovers a leak of high pressure dry gas in the cooling tower. Any unusual noise upsets him and he is very much concerned. Actually the leak is only a slight one, no condensate is noticeable on the surface of the water in the cooling tower basin and the heat of rising air in the tower quickly carries the escaping gas upward and dissipates it. Casual inspection would reveal the fact that the "pin hole" leak will not increase materially for some time. The man becomes extremely upset and broadcasts the cry of "wolf-wolf." If he does this often enough, the fable referred to may actually become a reality.

This same man is very likely to be priming a gasoline pump and working up to his ankles in gasoline, and thinking nothing of it, usually because he has done it many times before and is still alive. He needs a plain and fancy talking-to. His failing did not involve specific incidents. It was deeper than that. He displayed characteristic lack of judgment. Corrective measures should emphasize this and deal in generalities, for the next incident will not likely be the same in every detail.

Night Operator

However, the operator on shift at night, alone or otherwise, should not hesitate to phone for help or advice whenever there is the least doubt as to the wisest course of action. No reasonable man would resent such a call under the most adverse conditions, such as three o'clock in the morning. The answer may be very simple, but the man is not calling to say "good morning." He seriously wants information or, more often than not, confirmation of his own conclusions. Treat him with the consideration he undoubtedly gave you before deciding to call.

A good judge must make decisions—"overruled," "sustained." etc. He weighs the possibilities in the time allotted. He consults others when in the least doubt. In his own field the operator is the judge and is therefore judged by his judgment.

d. **Sense of hearing and smell.** This is a subject of minor importance compared to the one just discussed. However, a sharply developed sense of hearing and smell can be of value. It may be a matter of practice or it may be a gift, but some men can hear a gas leak in a cooling tower when no one else can. Others can smell gas or vapors, smoke, oil and distinguish between the smell of burning wood and burning oil. The advantages of these sharpened senses are obvious and are merely mentioned in passing. They tell you when to worry, what to worry about and "where is it?"

e. **Good men are good operators.** Strangely enough, all good men do not make good operators. Even those in closely allied work may not be material for operating. It is usually a good rule never to argue a man into becoming a gasoline plant operator. Take those who want to be, who have the "yen" for operating. A man may be a good designer, welder, rigger, etc., but he has a secret fear of some phase of operating. That fear can only be overcome by himself, by his acquiring experience, knowledge and, above all, confidence.

When to Leave

a. **One or more serious ruptures.** In determining to leave a plant, one has to exercise his own judgment and should not have time to call up his boss and ask his advice. In any event he will find his management very reasonable in considering the advisability of his having left. Invariably the operator will stick to his post too long, if anything. The causes of this are many. Principally they are: sense of responsibility for what has happened, guilty conscience, feeling of responsibility for equipment or lives of others, curiosity as to just what happened, fear of having to explain, and waking up too late from a sound sleep.

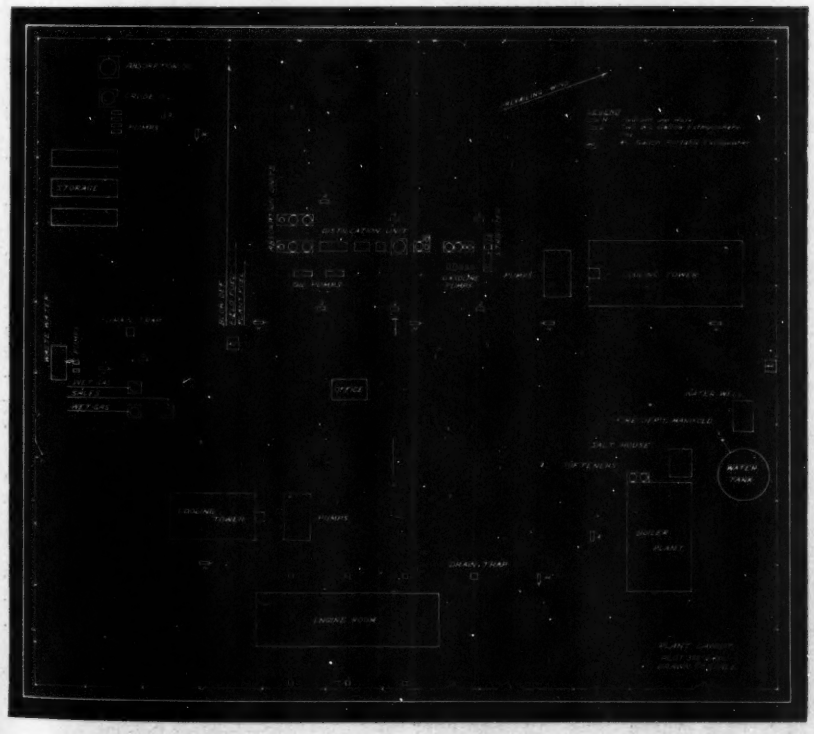
Directly, the reason for leaving usually results from a rupture of a line or pressure vessel. During normal operation of a well-designed plant only some condition far beyond the control of the operator might cause such a rupture.

Indirectly, some repair job or change in operation might result in a serious rupture. More will be said of this later.

At any rate, it is important to have sketches or drawing of lines or "hook-ups" available so that the operator may quickly isolate a serious leak with least interruption of service and with the least creation of other hazards.

Every repair job should be carefully planned and all possible effects upon operation considered. Obviously these jobs should be performed when extra help is immediately available.

b. **Otherwise minor condition not found till serious.** Picture yourself as an operator, suddenly finding an accumulation of gasoline vapors in an obscure place. The leak was a minor one but must have orginated some time ago. What do you do? Invariably you will run right into it. The reason for this fact is that you either have a guilty conscience from a realization of definite neglect or you fear the possibility of your neglect, being the cause. It would be far better for you to rely upon the consideration that should be given you based upon your actions following its discovery. Try to isolate the leak without getting into it. In this connection the following paragraph should be considered.



c. **Proximity of source of ignition.** Possible sources of ignition should be borne in mind. They bear very strongly on the questions of when to leave, when to stay at a safe distance and when to walk in using the proper precautions. The principal sources of ignition are: boiler fires within the plant, boiler fires on a nearby lease, engine exhausts, cigaret smokers on the lease or nearby, rubbish fires, sump fires, magnetos that are not vapor-proof, carelessly dropped "light 'em where you strike 'em" matches, static (don't be afraid to ground yourself before approaching the danger zone), disturbed gravel, contact of tools with hard surfaces or gravel, broken power lines, lightning and partial shorting of a spark plug. Boiler fires have been by far the greatest offenders.

d. **Domestic fires.** Only one type of domestic gas hazard comes within the scope of this discussion. Often times gas departments furnish gas to the homes of employees or landowners. Such practice should be completely discouraged unless proper installation and inspection is provided. Personal element should not be relied upon to see that the pilot light on Mrs. Jones' water heater is relit after a plant shutdown. Automatic protection should be provided. Also, gas companies furnish gas at a comparatively low pressure in their mains—for a purpose.

e. First flash. After the first flash or explosion the danger is over. "When to leave?" Before the first flash. "When to return?" After the first flash. This presumes proper design of, and pressure relieving valves on, all pressure vessels. Subsequent fires will be a benefit to those attempting to secure the equipment involved. Firemen, even when called upon to stand-by, should be grateful for this.

Devices For Shutting Down

Devices used for shutting down certain pieces of equipment before abandoning a plant should be carefully planned. It is very easy to go "hog-wild" on such gadgets and spend too much money and also increase the hazards. In most cases specific recommendations cannot be made involving all such installations for a particular type of equipment. Shut-down devices involve shorting of engines, shutting off boiler fuel, flooding fire-boxes with steam, flooding boiler rooms with steam, starting a general alarm signal, grounding recompressors, etc.

The time required to operate these devices is, of course, very important. If it is essential to open a valve, this valve should be a quick opening one. It should be conveniently located and well marked. Only a "sure-fire" device and a simple one is permissible. At that, more such installations can be designed than should be used. The reason for this is that carelessness, haste or mechanical failure might result in a dangerous shut-down at a very inconvenient time.

They should be so simple that there is never any question as to when to operate them. In this connection deliberate hand controlled operation is a benefit. An obvious exception is in the case of over-speed governors for engines.

Pressure Mains

The subject of pressure mains will be confined to lines leading into and out of a plant. One example will serve for many. A gasoline shipping line is properly equipped with discharge valve and check valve. Check valves have been known to stick in their customary position—open. An otherwise minor, and easily localized fire occurs at the shipping pump. The fire prevents the operator from approaching the discharge valve. He should be made acquainted with the location of a remote valve in the main in order to quickly isolate this fire. Otherwise plant "A" may be unknowingly feeding the flames that consume plant "B." Even though a plant may not be pumping into a main line, this should be given consideration. tank truck and L.P.G. shipments not excluded. In fact any line leading into or out of a plant should have a remote shut-off valve if there is any possibility of its feeding a fire with flammable material in case of rupture in the plant. Lines leading out should also be equipped with check valves.

Further discussion of this subject would lead to innumerable specific cases. The object, after all, is merely to draw attention to proper consideration of the hazards involved in designing pressure mains into and out of the plant.

Design

Pressure vessels. Reputable manufacturers of pressure vessels are well guided by codes for their safe design. From the biggest of our worries, this part of the design of a plant has become the least. Hand in hand with the progress of welding and the demand for larger sizes and higher working pressure and temperature requirements the manufacturers have developed metallurgy, X-ray and stress-relieving to a remarkable degree. They have left to the plant designer and operator the only worries. These consist mainly of properly equipping the vessels with fittings and safety relief, due consideration of corrosion and the possibility of a continuously fed torch of fire directed against the vessel. Earthquake protection can also be provided to a large extent. So much for modern design of new vessels.

Many times we have occasion to use an old vessel for some new service. In any such case the vessel should be checked according to existing rules for joint efficiency, thickness of plate, etc. It was not long ago that the industry was turning out and using vessels of the most absurd design, even for low pressure work. The criterion was that it withstood the required test pressure—once. Progress in other industries, such as refrigeration, in the design of similar unfired pressure vessels containing non-inflammable fluids was entirely ignored. Thankfully, our manufacturers' guarantees may now be relied upon in this respect.

Gasoline and water mix. Yes, they do, and we are reaching pressures where they become dangerously good mixers. Where separation of gasoline and water occurs under high pressure and the water is drained off and released at low pressure, gasoline vapors will be released from the drained water, sometimes in dangerous quantities.

Gasoline pumps. For gasoline service the centrifugal pump and the reciprocating pump are both used. As to their relative merits from a hazard standpoint there is no difference. Each requires the proper design of packing gland, the proper type of packing and the proper maintenance of packing. In one case there was an engineer starting up a stabilizer. The packing on the centrifugal reflux pump suddenly blew out with 180 lbs. per sq. in. back of it. The same engineer was working on another piece of equipment when a reciprocating pump suddenly blew out its packing with five lbs. per sq. in. of heavy gasoline in back of it. In each case there was no warning and he declares it a draw.

Although a very creditable improvement has been made in the design of packing glands for both reciprocating and centrifugal pumps, it still seems that the designer decides at the last minute to equip his pump with something to hold packing. It usually works fine in cold water. In extreme cases of temperature and pressure, he may be more cautious. Let us hope so, for from such types of very apparently dangerous service we have learned many a lesson in handling low-pressure dynamite.

Repairs

Welding in the plant. A welder in a gasoline plant should be one experienced in such work. Invariably this experience will involve safety to himself and confidence as to conditions immediately surrounding him. To avoid other hazards his duties should be made known to someone responsible for conditions beyond his scope.

Almost invariably a welder, or any other repair man, has very little conception of the extreme danger of relatively small quantities of vapors in a confined space. He will speak casually of having once even cut into a tank full of gasoline under pressure without serious results. This man should be told what the explosive limits of a gas and air mixture are. The tank that is not under pressure is the one to be feared. It might have enough air in it to be dangerous.

This comparative safety of working on a vessel under pressure is not understood by many refinery workers. It accounts, in part, for their fear of using the hot-tapping machine. Of course, their being able to shut down equipment for repairs without ultimate loss of production accounts primarily for their inexperience in the use of hot-taps.

Light and Noise

Plenty of light. In arranging the lighting of a plant one needs only to put himself in the position of an operator on duty at night. He, of course, carries a flashlight. Cooling towers, therefore, need little or no

(Continued on Page 23)

Gas Compression Variables

This Paper Discusses Compressor Performance and Was Prepared by the C. N. G. A. Gas Engine and Compressor Committee, of Which Lyman F. Scheel is Chairman

LYMAN F. SCHEEL

WE CAN OFFER a reasonable solution to most of our mechanical engineering problems in natural gas operation. The one perplexing exception is that of compressor performance. The larger part of our information to date consists of several thermodynamic equations as found in the regular textbooks, and an article written by Thomas R. Weymouth in 1912. This paper laid the engineering foundation for all subsequent natural gas transmission and compression. Besides an excellent treatise on transmission it included a rapid method for obtaining power of compression by means of an empirical equation. This equation recognized that the function of compression in the industrial machine did not follow the theoretical thermodynamic relationship. Weymouth's data was obtained in March, 1911, from two, 48" stroke, 88 r.p.m. compressors. The range of testing included ratios of compression up to 5. Modern trend in design has superceded this class of machinery with lighter, high speed units.

Data Inadequate

The situation today finds our engineering data so inadequate and poorly coordinated that reputable manufacturers, in quoting on a given simple problem, will vary as much as 15% plus or minus, on the gas delivered per unit of power. An A.P.I. report in 1929 revealed that the Mid-Continent operators were at variance of plus and minus 40% on the same subject. This is not in keeping with our modern technology.

We believe this matter is timely and of considerable importance. Petroleum engineers have estimated that the compressor requirement in one area alone in California will require an expenditure ranging between $15,000,000 and $40,000,000, within the next five years. The point is: Are you operators willing to spend this huge sum on a plus or minus 15% basis?

The directors of this Association, in appreciation of this situation have appointed this group, known as the Gas Engine and Compressor Committee, to formulate the technical information on this subject into a more definite and coherent form. We plan to present the Association with a bulletin which may be used as a reference in the matter of conservative engine rating, and a general procedure for compressor specifications, including a means of measuring the variables involved. By means of such a plan, an interested party could reduce all proposals for a project to a common basis. It would imply that one indicated compressor horsepower would pump as much gas in one machine as in another, providing the limits of the variables were reasonable, or at least comparable. It has been suggested that this bulletin include an outline of compressor testing procedure and technic.

Analysis Needed

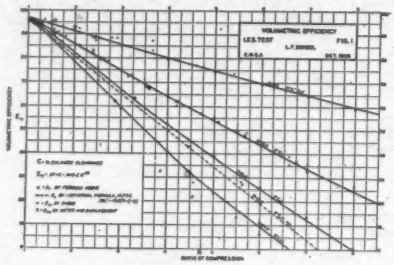
Before we went far, it was evident that the first and greatest need was a thorough, comprehensive analysis of the variables and the power relationship of a gas compressor. The Industrial Fuel Supply Co., through their Vice President, S. W. Todd, and Chief Engineer, J. E. Wallace, made such a test possible by placing at our disposal, three Cooper, Type 80, compressors at their plant No. 12, Dominguez Hill.

The details of the tests and equipment are included in an appendix. It will be sufficient to state here, that the work included 68 runs wherein we introduced every conceivable variable, except the influence of different valve design, the supercompressibility effect at pressures above 300 pounds per square inch and the influence of the composition of the gas being compressed. Our results lead us to the conclusion that there were other factors of greater moment than the difference in valve design. We doubt if there is any consequential difference in

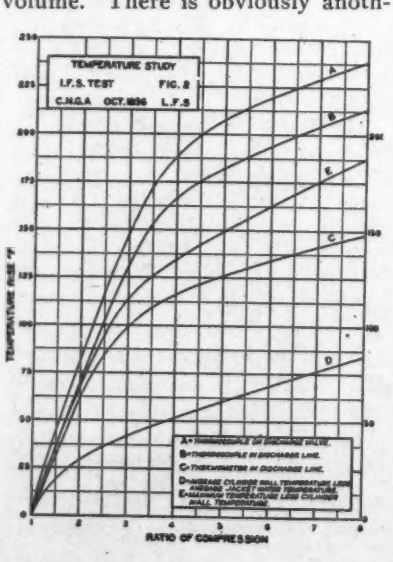
the efficiency of the modern design of compressor valves.

Boyle's Law

This committee holds that the solution of the problems concerned with supercompressibility and gas composition are very closely related and will only be solved when we are much better informed on the subject than at present. The general equa-



tion for determining the power of compression implies that Boyle's law is perfect. It also presumes that the "n" value for a given gas is constant throughout the compression and for all pressures and temperatures. Those who are familiar with the recent development in gas measurement and the investigations of the physical properties of the hydrocarbons, appreciate that Boyle's law has very definite deviations and that the specific heat is influenced by the pressure and temperature. Figure 8 illustrates the falseness of this last asumption. The law holds at very low pressures, but it is now well known that as the pressure is increased the volume occupied by the actual gas decreases below that which would be indicated by Boyle's law. It reaches a minimum and thereafter increases until the actual volume exceeds the Boyle's law volume. There is obviously another condition at very high pressures where Boyle's law again holds true. The actual volume occupied at low temperatures is also smaller than that given by Boyle's law. The composition of the gas also plays a part in this deviation. This deviation is termed the "supercompressibility" of gas because at usual conditions it is a shrinkage below the Boyle's law volume. Ordinarily, pressures are never carried high enough for the deviation to show the previously mentioned reversal effect. These observations have been made in research laboratories under equilibrium conditions far different from those encountered in an industrial gas compressor. We were not able to observe this shrinkage effect on our I.F.S. test, but we did observe the evidence of an increasing volume at high ratios of compression. The results of our tests are presented in graphical and equational form. The influence of the variables effecting the volumetric efficiency are given in Fig. 1. The formula in general use for this function assumes isothermal expansion of the clearance gas and includes estimated slippages and wire-drawing effects. We observed no evidence of such losses. The dashed curve represents the volumetric efficiency of the 9" cylinder with 15.5% clearance as given by such a formula. The contrast between this curve and our test curve is very pronounced. Steel bottles were attached by a ½" pipe connection to the cylinder to increase the clearance for the two lower curves. This small diameter connection is responsible for the discrepancies in the lowest curve. A general rule for the use of clearance bottles would require that one square inch of throat should be provided for each 250 cubic inches of bottle. This throat area should be a least 5% of the bottle cross-sectional area.

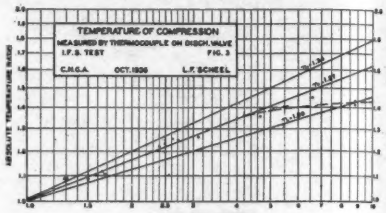


The piston speed and the temperature of the cylinder jacket and intake gas had no measurable effect on our general volumetric efficiency formula.

The correlation between the scaled volumetric efficiency, E^{vc}, and the metered-displacement relationship, E^{vm}, was excellent. Where discrepancies existed, the E^{vc} would usually follow the general curve and a questionable gas measurement would account for the erratic E^{vm}.

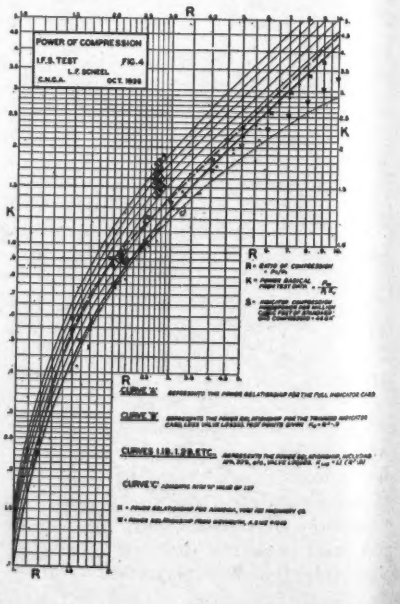
The exponential power of 0.85 for the expression (1/n) indicates that the clearance gas extends on a logrithmetic slope of 1.175, which is the "n" value of the gas under these conditions. The true adiabatic "n" value for this gas is 1.268. From our experience, we might suggest that the exponential power could be obtained by taking the reciprocal of the expression: .65 (n-1) + 1.

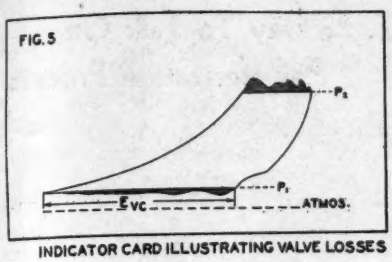
Fig. 2 illustrates the difference in the discharge temperature as measured at the discharge valve, and in the discharge line as indicated by a thermocouple and a thermometer. It shows the average temperature difference between the jacket water and


TEMPERATURE OF COMPRESSION
MEASURED BY THERMOCOUPLE ON DISCH. VALVE
I.F.S. TEST FIG. 3
C.N.G.A OCT. 1936 L.F. SCHEEL
RATIO OF COMPRESSION

the cylinder wall. It also illustrates the difference between the maximum temperature of compression and the average cylinder wall temperature. Fig. 3 illustrates how ratio of absolute temperature rise varies with the ratio of compression. The relationship follows that of a gas having a "n" value of 1.27 until an "R" value of 5 is reached. Beyond this point it approaches an asymptote of 1.45. The relatively low mass flow, radiation and heat flow to the jacket water accounts for this phenomenon. The jacket water absorbs from 10% to 16% of the heat developed in the compressor cylinder under normal operating conditions. This percentage will vary inversely as the piston speed.

We performed three tests with-

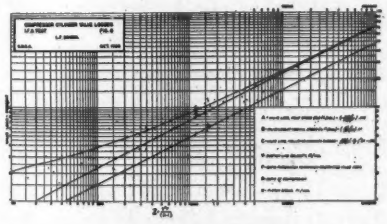




INDICATOR CARD ILLUSTRATING VALVE LOSSES

out jacket water circulation, simulating adiabatic compression. This had no perceptible influence on the results.

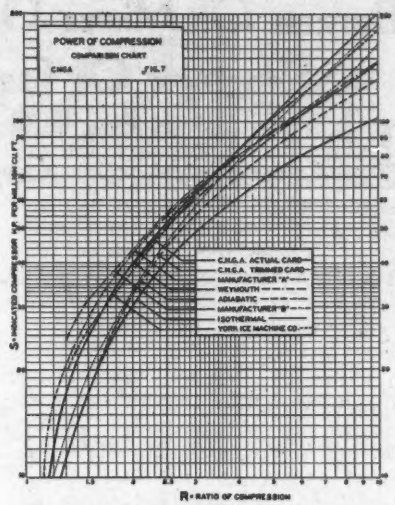
The appendix contains the development of two "K" factors. One of these factors, "K_1", represents the variable n/n-1 (n-1/R-1) in the thermodynamic equation for work performed in a compressor. This expression can be proven to be equal to P^m/E^{vm}-P^1 at a given ratio of compression if Boyle's law is true. Since we know that Boyle's law is not true we have assigned "K" as equal to the last expression. The dashed curve B and the points given in Fig. 4 represent "R" plotted against the "K" values from the trimmed or perfect card test data, ie., less "valve losses." The lower curve, C, represents the theoretical adiabatic relationship, for a gas having an "n" value of 1.27. It will be noted that the curves B and C are only similar up to an "R" value of 2.5. Beyond this point the curve B rises above C so that at an "R" value of 4, "n" would have to equal 1.40; at 6, 1.87; at 8,1.96 and at 10,



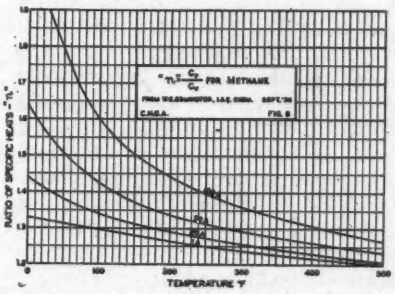
2.02. This is contrary to expectancy. The effect of the supercompressibility on the "n" value corrections should have a decreasing influence on "K". This phenomenon might be explained as a molecular turbulence deviation at these high compressions which increases the volume, just as the molecular concentration is given as responsible for the shrinkage deviation. The points marked "N" in Fig. 4 for the York Ice Machinery Co.'s "K" values for ammonia, take the same general form as our curve. Their CO_2 data also concurs. We feel that the York data is quite reliable, the measurement of the fluid compressed being weighed as condensate. This explodes the hope that the "n" value held the key to the solution of this problem. The power relationship can only be stated in an empirical equation. The equation for the gas tested is given on Fig. 4. More work must be done on gases of other composition to establish a more general equation. Our future program includes such an investigation.

The 1.1B, 1.2B, etc., curves represent the power relationship including 10%, 20%, etc. valve losses. Fig. 5 is a typical indicator card and illustrates the significance of the term "valve loss." The "valve losses" are measured by the shaded area below the suction pressure line and above the discharge pressure line. It will be noted that the general average curve A extends beyond B by 25%. We measured "value losses" as high as 35%. This could better be termed as "surge loss." It represents the sum of kinetic energy involved in charging and discharging the cylinder. We undertook to correlate these losses into an analytical expression. Fig. 6 is the result of a study of fifteen different combinations of the variables involved. This offers a solution that we have never before possessed. Time and application will prove its worth and authenticity.

Fig. 7 is a comparison chart, where the difference in the power of compression between the various authorities may be observed. The "valve losses" account for the difference in the curves in the lower left half of the chart. The group of curves, excluding the three lower theoretical ones, are within a 12% range between an "R" value of 2 and 4. Beyond this point they spread to a 40% variation at an "R" of 10. The lack of test data and difficulty in measuring the small quantity of gas handled at the high range of compression accounts for this wide discrepancy. It is likely that much of the data at this range has been extropolated from the lower range and followed the theoretical relationship. Manufacturer "A" undoubtedly realizes the tendency to depart from the theoretical relationship and has arbitrated the issue with a lazy S curve. The 1932 data of the P.C.G.A. practically coincides with our solid line curve as far as an R of 3. The Biddison curve follows the manufacturer "A" as far as an R of 3. His data is only given to an "R" of 4.5, where it coincides with our curve.



Besides extending the literature by this small margin on a subject so little exploited, it is hoped that new avenues to better compressor performance can be opened by those who give it consideration. In the average small, 1000 horsepower, plant there is an annual operating expense item of some $20,000 which can be affected by efficient control.



It does not require much stimulation of the imagination to visualize real dividends from the application of this material.

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Bob Hume, who will be in charge of field operations for the Wood-Callahan Oil Co. at Hidden Dome, Washakie county, Wyoming, is understood to have ordered an extra supply of red flannels to keep his shins warm. Wood-Callahan expects to spud in its Keye No. 1 there before the snow flies.

Bureau Of Mines Official Says No Shortage Of Gas; Conservation Cited

LIKE A DIRECT answer to agitation for federal control of natural gas deposits because of their alleged waste and threats of shortage, whether the author so intended or not, comes the address of John W. Finch, Director of the U. S. Bureau of Mines, before the American Gas Association at Atlantic City, New Jersey, Oct. 28.

Director Finch told his audience that there is no danger of shortage of gas. In part, he said:

"The 1,500,000 consumers of natural gas should be interested to learn that conservation of natural gas has made great progress in recent years," especially in California.

Stripping of dry gas for its small gasoline content and wastage of the residue has been halted by legislation, he said.

California Praised

"California is making great strides in the conservation of natural gas," he added. "The decrease in natural gas wasted in that state from about 60% of the production in 1923 to 6.2% in 1935 was due in part to increased production and the natural decline of flush oil fields.

"It also reflects the more orderly development of fields, improved methods of production and the growing realization that waste of reservoir energy reduced the ultimate recovery of oil."

Control Legislation Sought

Reports coming from Washington for many months from time to time have been disquieting. Common carrier pipe line legislation was sought at the last session of Congress in a bill introduced by Rep. Lea of Califoria, which did not come to a vote. Its provisions would seem to apply only to pipe lines crossing state lines and this should eliminate California lines for none of them are in interstate commerce.

Study of maps showing the gas pipe line systems through the nation show that California is the only state which consumes all the natural gas it produces and does not waste, not a cubic foot being shipped into another state. Texas natural gas goes into a dozen states or more, so does that of Louisiana, Oklahoma, and Kansas. West Virginia and Ohio, the great gas states of the Appalachian area, pipe their gas into several states, as do Pennsylvania, and all the other gas states. A new map even shows an extension into Oregon of the small natural gas pipe line serving a limited area in south central Washington with gas from shallow wells in Benton County, thus putting the system in interstate commerce.

Production Control

Hints come from Washington of possible attempts to control the production of gas by federal authority. Presumably no such legislation could possibly apply to any fields whose gas is never shipped across a state or international line which is the case with all California fields. Gas, is of course, in a different category from oil in that oil may be shipped in tank cars or ships across state lines even though there may be no available interstate pipe line.

Federal control of gas production would be a direct step in the direction of federalization of the oil industry, for so much of the natural gas utilized comes from the same wells as the oil.

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Equitable Well Deepest San Bernardino Test

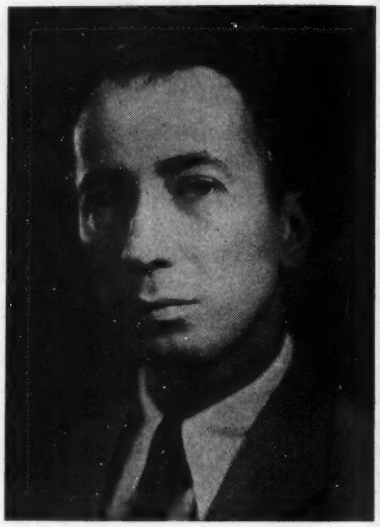
EQUITABLE PETROLEUM was 2990 ft. deep in its wildcat at Hawes, San Bernardino county, Tuesday morning, still drilling ahead. The company's Los Angeles office reported showings of oil and gas on the ditch, the gas very strong. No decision has been made as to when the casing will be set for a test.

The present depth is the greatest yet attained by any well within a distance of more than 150 miles. The old Kramer Consolidated well stopped about 50 ft. higher, and the work done by the Interstate Oil Co. was all redrilling and stopped above 2900 ft., never reaching the bottom of the old hole. The previous statement that the Interstate went to 4000 ft. was in error. The records of the State Division of Oil & Gas corroborate the statement that the Interstate did not even get to the bottom of the old hole which produced a considerable quantity of oil, according to the affidavits of 29 witnesses.

F. E. Frey To Talk On Polymerization Process

FRED E. FREY, chief chemist, research department, Phillips Petroleum Co., Bartlesville, Okla., is presenting a paper on "Polymerization" at today's meeting of the California Natural Gasoline Association. His subject is one of the most talked of in the industry today, and the Association feels very fortunate in being able to hear his remarks.

Mr. Frey is a graduate of Wooster



College, Ohio, and took his M. S. degree at Ohio State University. He is a member of the American Chemical Society and, prior to his joining Phillips, had been an instructor in chemistry at Wooster for one year and was also an assistant chemist of the Bureau of Mines at Pittsburgh, Pa.

At the latter place, he did some of the first work on the complete analysis of the products of primary thermal decomposition of gases, developing and improving apparatus and analytical procedure. Since joining Phillips, he has continued this work, using pure hydrocarbons and making complete analyses, and has taken part in research on gas polymerization.

He has presented papers at various chemical society meetings and has published some of his work in trade publications.

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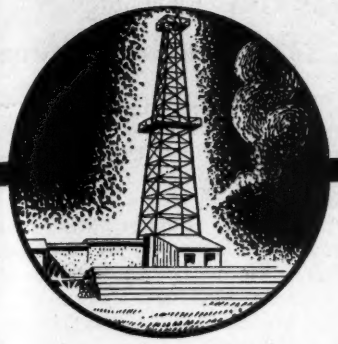
When you see the name of Marcia Hunt, rising young screen actress, you may be interested to know that she is the niece of N. K. Potter, whom the old-timers know for his part in the early development of Midway.



Production

Second Ten Sections Well Makes 1376 Bbls. From 8385 Ft. On Test

SHELL COMPLETED its K. C. L. No. 10-1, sec. 29, 30-26, Ten Sections, last Friday. On a 24-hour test it flowed 1376 bbls. of 35 gravity oil and 1,270,000 c.f. of gas through a 7/16 inch bean. Tubing pressure was 375 pounds, casing pressure 1190. Initial cut was 2.2%.

Bottom of the hole is at 8385 ft., open from 8315, a distance of 70 ft. to draw from. As the casing is set some 500 ft. below the bottom of the discovery well there is left an area of that much untested formation for future wells to draw upon, of which about 350 ft. will likely be good. The discovery well tested and draws from the first 70 ft.

Standard Oil was coring at 8240 Sunday, far below the bottom of the discovery well, and has had no signs of oil to date. This well is on sec. 20, 30-26, northwest of the two Shell wells. Coring from 8200 to 8220, a 16-ft. core of hard brown shale was recovered. Ohio is getting a like formation at about 8165 on sec. 19, 30-26.

Kettleman North Dome

While Kenda is starting four new wells on the North Dome, Standard Oil has suspended three, dropped them from the drilling reports, and will wait upon the results in other nearby drilling wells before resuming work. One of these wells, No. 19-J-2, is 6504 ft. deep. The other three were just starting when the order to suspend was issued. The derrick for No. 19-J-4 had just been completed, and No. 13-87 partially rigged up. Rigging up on No. 19-J-85 should be completed this week. For No. 19-J-8 a location has been graded, and one staked for No. 33-J-38. Standard's deepest North Dome well is No. 1-U-54, located near the sounth end and tied up with a fishing job at last report.

Kenda's four new locations are: No. 56-28J, sec. 28, 21-17; No. 76-28J, sec. 28, 21-17; No. 63-54J, sec. 34, 21-17; No. 61-4P, sec. 4, 22-17.

Associated At Belridge

Associated has set seven-inch casing on top of the Wagon Wheel Zone at 8364 ft. and drilled into the zone to 8430, in its Reward No. 5 on sec. 34, 27-20. The shutoff is 300 ft. lower than in the Continental's recently completed big well. The well is in the area known to be underlaid by the Wagon Wheel zone.

Belridge Oil Co. has the top of the upper oil sand at 5300 ft . in its No. 12-1, sec. 28-20, and drilled 150 ft. into it. Belridge is building the rig for its No. 14-35, sec. 35, 27-20.

Fresno Wildcat Sticks Pipe

Western Gulf's Fresno wildcat is having more than its share of hard luck just when it was ready to make a production test. After drilling below 8000 ft., it lost the tubing, and no sooner was that recovered than, going back into the hole, the drill pipe stuck and it is trying to recover it.

Six miles northeast of Western Gulf, the Mohawk Petroleum Co. has spudded in its Langer No. 1, a wildcat on sec. 30, 16-15. The location is at Monocline Ridge and near the mouth of Panoche Pass.

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R. M. Barnes, chief geologist of Continental Oil Co., spent a few days last week in the Ventura area.

November Crude Quota Unchanged at 544,000

CALIFORNIA'S NOVEMBER crude quota remains unchanged at 544,000 bbls. daily notwithstanding the suggested increase to 549,500 bbls. by the U. S. Bureau of Mines. This 5500-bbl. increase, however, was predicated on the recommendation of no withdrawal of crude oil from storage during November.

For the sixth consecutive month the Central Committee of California Oil Producers has held to a fixed quota of 544,000 bbls. As pointed out by Lawrence Vander Leck, chairman, at the last meeting, when averaged down it will be found that the state allocation has been slightly higher than the Bureau of Mines recommendation which fluctuates from month to month. Operators are a unit, in their opposition to such fluctuations.

Although withdrawals from storage during the last few months have been heavy, stocks are practically at the same level as at the close of January, last. Steady additions to storage are anticipated for the next few months and the chairman urged committee members to bring pressure to bear on operators within their jurisdiction for greater cooperation in approximating their allotments. The Lake View district has swung into line with its agreement to shut in the field—approximately 10,000 bbls. daily—for the last 10 days of each month. Effect of this move was evidenced in the Oct. 23 report, the first day following the shutdown, when the state averaged 576,691 bbls. During the first 24 days of October, production averaged 586,297, or 5655 bbls. higher than for the same period of September.

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Frank O'Neil, of the M. O. Johnston Co., who has been in New York on business, returned to Los Angeles last week.

Wildcat Starts in Town Of Walnut; Durgin Project May Be Deepened

UNDER THE NAME of Julian Drilling Co., a wildcat is being started this week by G. A. Julian and associates at Fuerte Drive and Suzanne Avenue, Townsite of Walnut, 400 ft. north and 1425 ft. west of the center of sec. 5, 2s-9w, some eight miles east of Puente and west of Pomona. A 74-ft. wooden derrick has been erected and rigged up last week with the light drilling equipment with gasoline engine used to drill the Charter Oak well near Covina to 1000 ft. Spudding in was expected on Monday or Tuesday of this week. C. H. Shannon, who drilled the Charter Oak well, will be the superintendent. Equipment indicates that comparatively shallow drilling is anticipated. About 2300 ft. is understood to be where a second sand is expected.

Nothing has been learned as to the identity of Mr. Julian's associates. He is a brother of the late C. C. Julian and was in charge of the field work in some of his brother's enterprises. So far as is known, this is his first independent venture.

May Deepen Durgin Well

In the fall of 1932, Lawrence Durgin, now with Martin Van Couvering, with two associates, drilled to 1760 ft. on the sw¼ sec. 33, 1s-9w, about three quarter miles northwest of the Julian site. Operations were stopped by mechanical trouble and not for lack of encouragement, Mr. Durgin states. Large bodies of shale were penetrated and some cut oil. Mr. Durgin still holds the lease and is negotiating for the deepening of the wells.

The Durgin well is the nearest drilling to the Julian site, the next nearest being the Sentous ranch well drilled recently by Huntington Beach people, headed by C. M. Rood and his tideland drilling associates, to 3000 ft. This well developed some showings but has been abandoned, the hole capped, and the lease quitclaimed to the land owners. Another well was drilled on the Sentous land some years ago by Shell to 3600 ft. These wells were located about two miles from the Julian drill site.

Charter Oak Idle

At Charter Oak, no move has been made to resume work on the wildcat well drilled to just below 1000 ft., but only a few days ago Mr. Shannon is quoted as having repeated that heavier equipment is to be installed for indefinite deep drilling amply financed. Notice was also given the State Division of Oil & Gas of the intention to go ahead. In case of very deep drilling, it would seem likely that a new derrick may be needed.

Late information from what should be a reliable source is that the Charter Oak well had some fairly strong gas and some small quantities of oil sand which cut enough oil to color the liquid used in the test.

Culver City Wildcat

Vincent Petroleum Co. will redrill and deepen the old Taylor well on sec. 12, 2-15, west of Culver City, drilled to 6238 ft. some six or seven years ago. The well was located about half a mile west of the nearest drilling in the Culver area of the Inglewood (Baldwin Hills) field. Thos E. McCauley, who was associated with Wallace Taylor in the original drilling, is head of the Vincent Petroleum Co. Drilling was done upon the theory that the Baldwin Hills structure extends to the west beyond the hills to the northwest.

New Coast Wildcats

Archie Mays of Bakersfield, who has been operating for years in various parts of the East Side of Kern county, and is now producing in Coffee Canyon, has erected a rig for a test about three miles east of Oceano, San Luis Obispo county, sec. 3, 11n-35w. This locatioon is in the neighborhood of the old Painted Hills well which is being redrilled by a Long Beach operator.

Texaco's test on the Monroe Swale, Monterey county, will be drilled at a point 500 ft. due east of the center of sec. 30, 19s-7e, and will be known as Dumphy No. 1.

■ ■ ■

Hobbs Derrick Starts

Hobbs Petroleum Corp. (L. H. Goodnight, Newton Bass) will drill on the w½ Lot A, La Reina Place tract, north of Burnett and east of Brayton, Signal Hill, where the derrick is expected to be started about the middle of this week.

Petrol Plans Campaign In Redondo Beach Area

PETROL IS THE one company known to be planning an early drilling campaign of any extent at Redondo Beach. For a number of weeks, the company has been devoting itself chiefly to determining just what its new wells on its 52 acres purchased from Thos. W. Simmons will produce. What it has found is quite satisfactory, productivity, depth and cheap drilling considered together.

Petrol has three wells completed. Its lease comprises 52 acres, on which it expects to drill 10 wells. Its No. 2, the first well it drilled, had an initial production of 180 bbls., and after some three months of operation is good for about 100. Since it came in its average has been about 132 bbls. Its second well came in at about 150 bbls. and now yields about 110. The third was subject to an experiment in the use of a compressor. This was found unsatisfactory and removed. The well now produces about 112 bbls. on the pump.

No sand trouble whatever has been encountered in any of the three completed wells. In other parts of the field, there has been some trouble from this source. The depth of wells is close to 4000 ft., the drilling quite easy. The company has found the use of a derrick over a completed well unnecessary, and as soon as a well has been completed, and put on production, the derrick has been skidded to the next location, thus permitting the drilling of an indefinite number of wells with only one derrick, an unusual procedure and one reducing the cost of operations.

By virtue of having its own refinery, Petrol has no need to seek buyers for its production which is taken by truck and trailer direct to its plant on Bandini Blvd. for making asphalt and road oil. For the present, Petrol will concentrate its drilling to its properties at Redondo and Gato Ridge.

■ ■ ■ ■

East Coyote Well Planned

Graham-Loftus Oil Co. will drill another well on its East Coyote property. Work will be started at an early date. Wm. Hendricks, superintendent for the company, will be in charge. Richard Bard is now president of the company and Chas. C. Perkins, vice-president.

IDECO

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Engineered for sizes and capacities to meet any condition, well depth or volume.

Low cost operation features are combined with oil country sturdiness. All parts, including gears, are produced in our own factories and assembled under the supervision of those who engineered them.

Their continued operation, on many of the country's largest wells and in the most important fields in increasing numbers, is evidence of their value in the oil production industry.

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INTERNATIONAL DERRICK AND EQUIPMENT COMPANY
of California

LOS ANGELES • TORRANCE • BAKERSFIELD

• California • Production

OCTOBER 28, 1936

	October Quota	Barrels Production
San Joaquin Valley		
Belridge—North	10,220	14,657
Belridge—South	1,980	1,644
Buena Vista	16,770	17,038
Coalinga—East	11,770	9,726
Coalinga—West	5,370	5,134
Coffee Canyon	4,705	4,625
Edison	5,345	5,504
Elk Hills	8,235	8,925
Fruitvale	7,460	9,575
Kern Front	9,540	10,616
Kern River	3,370	2,324
Kettleman Middle Dome	380	288
Kettleman North Dome	77,150	81,057
Lake View	2,900	1,183
Lost Hills	4,265	3,171
McKittrick	3,645	1,894
Midway-Maricopa	32,335	36,249
Mount Poso	15,495	16,960
Mountain View	21,565	22,015
Poso Creek	1,620	1,704
Round Mountain	6,915	2,633
Ten Section	415	740
Wheeler Ridge	340	342
Others	.....	.....
TOTAL	251,045	258,004
Coastal District		
Capitan	1,615	1,329
Elwood	10,860	11,828
Javon	350	304
Rincon	1,875	2,773
San Miguelito	1,170	1,928
Santa Barbara	1,110	1,066
Santa Maria	4,710	4,904
Santa Paula-Newhall	4,340	5,014
Ventura Avenue	29,475	31,405
Others	400	290
TOTAL	55,905	60,841
Los Angeles Basin		
Alamitos Heights	1,515	1,855
Brea-Olinda	8,000	7,791
Coyote—East	2,235	2,187
Coyote—West	7,930	7,211
Domingues	22,715	24,281
El Segundo	310	376
Huntington Beach—New	18,710	21,651
Huntington Beach—Old	13,170	14,174
Inglewood	12,015	9,143
Lawndale	80	86
Long Beach	60,270	65,605
Los Angeles	645	712
Montebello	5,835	6,046
Montebello Extension	1,715	4,349
Playa Del Rey	11,865	11,488
Potrero	295	278
Richfield	6,755	6,885
Rosecrans-Athens	1,970	2,414
Santa Fe Springs	41,245	44,704
Seal Beach	7,390	6,571
Torrance-Hermosa	5,585	6,267
Torrance Extension	1,795	2,068
Whittier	965	816
Others	475	364
TOTAL	233,485	247,322
STATE TOTAL	544,000	566,167
Average Production 10-1-28		583,539
Average Production 9-1-28		577,767

■ ■ ■

John Hewitt, of Hewitt-Kuster, is now in Texas on a business tour of the Mid-Continent fields. He expects to be away for about a month.

Drilling Report

Oil field operations reported during the week ended Oct. 24, show 22 notices to drill new wells filed, as compared with 18 during the previous week. 2 were in Huntington Beach, 2 in Montebello, 1 in Coyote Hills, 1 in Torrance, 1 in Piru, 2 in Cat Canyon, 1 in Santa Barbara county, 11 in Kern county, and 1 in Coalinga. Total new wells this year, 903, as compared with 823 at the same date last year.

Deepening or redrilling jobs numbered 12, as compared with 13. Total to date, 666; to same date last year, 659.

Abandonments numbered 9, as compared with 10. Total to date, 389; to same date last year, 328.

New Wells

	Well No.	S.	T.	R.
Coyote Hills				
Oil Conservation, Ltd. Jessup	1	17	3 S	9 W
Huntington Beach				
Re-Mine Oil Co. Humble	1	34	5 S	11 W
Herbert S. Kohlbush Kohlbush	1	34	5 S	11 W
Montebello				
The St. Helens Petroleum Co., Ltd. Monterey	22 & 23	2	2 S	12 W
Torrance				
Black Gold Corp. Black Gold	2	6	4 S	14 W
Piru				
Bolsa Chica Oil Corp. Hidden	1	5	4 N	18 W
Cat Canyon				
Todos Santos Oil Co. McLoney	1	4	8 N	32 W
Barnsdall Oil Co. Tognozzini	2	9	8 N	32 W
Santa Barbara County				
101 Oil Co. Hollister	1	35	5 N	33 W
Midway				
Associated Oil Co.	61-A	35	31 S	22 E
Honolulu Oil Corp., Ltd.	16	14	32 S	24 E
Sunset				
Berry Oil Co.	23	28	12 N	24 W
Kern County				
99 Oil Co.	99	1	5	10 N 19 W
Poso Creek				
Alphonzo E. Bell Corp. Fitzhugh	3	14	27 S	27 E
Calif. Western Oil Co., Ltd.	2	23	27 S	27 E
Mountain View				
Hogan Petroleum Co. Porter-Day	9	29	30 S	29 E
Trico Oil & Gas Co. Wilson	1	13	30 S	28 E
Round Mountain				
Calif. Western Oil Co. Ltd.	18, 19 & 20	7	28 S	29 E
Coalinga				
J. A. Tyler	3	14	20 S	14 E

Deepen or Redrill

Playa del Rey				
G. C. Champ Champ	1	26	2 S	15 W
Coyote Hills				
West American Oil Co. W. A.	13	24	3 S	10 W
Huntington Beach				
Lafayette Petroleum Corp. Community	5	2	6 S	11 W
W. L. Thomas Hume	4	10	6 S	11 W
Standard Oil Co. Bolsa	27	34	5 S	11 W
Rosecrans				
Barnsdall Oil Co. O'Dea	10	18	3 S	13 W
Long Beach				
Carl A. Lundberg Noll	1	24	4 S	13 W
Seal Beach				
Alamitos Oil Co.	2	3	5 S	12 W
Richfield				
Standard Oil Co. Kraemer 2	11	29	3 S	9 W
Mesa				
Rio Grande Oil Co. Perkins	6	28	4 N	27 W
Midway				
C. C. M. O. Co.	23	36	31 S	22 E
Mountain View				
Standard Oil Co. Wible	5	23	30 S	28 E

Abandon

Huntington Beach				
Transcontinental Oil Co.	6	10	6 S	11 W
Long Beach				
Concord Oil Co. Concord	1	30	4 S	12 W
Santa Fe Springs				
Vanda Petroleum Co. Vanda	1	4	3 S	11 W
Standard Oil Co. Walker Comm.	10	6	3 S	11 W
Simi				
James S. Hull Hull	1	2	2 N	18 W
Mesa				
Cedar Oil Co. T. L. & B. A.	1	28	4 N	27 W
Midway				
Crawford & Co., Ltd. Crawford	1	15	31 S	22 E
Lost Hills				
Associated Oil Co. Williamson	1	2	26 S	20 E
Mt. Poso				
Bern Oil Co., Ltd. Glide	4	15	27 S	28 E

"Doodlebugger" Gets Justification For Location

SOME YEARS ago, a resident of Bakersfield named Kelly made an instrument of his own contrivance for locating oil (what oil men generally call a "doodlebug"), and among his other locations was one for a wildcat well on sec. 29, 31s-30e, near the edge of the town of Arvin, and the Kern 29 Oil Co., organized by his friends and local people, drilled there. They reported some good showings but the well never produced commercially and was abandoned at 2415 ft., much too shallow to be conclusive.

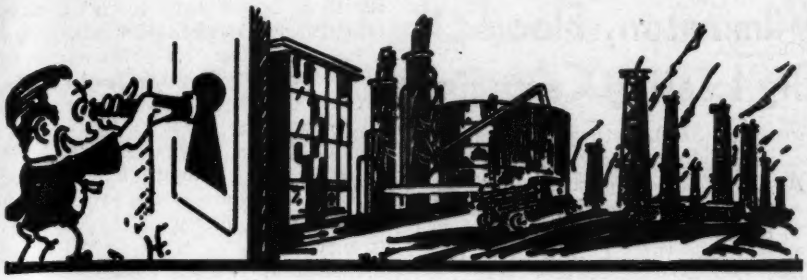
Since then, with the spreading out of the Mountain View field and the hope of a southern extension, General Petroleum started a well, now down a little below 7000 ft., on sec. 26, 31-29, some three miles west. Recent reports have been that this well has had some showings of oil and is drilling ahead. If Mr. Kelly is still around he is doubtless watching the G. P. operations with interest in the hope that they may show that he was not so far off in his location as he appeared to be when it was made.

On sec. 22, 21-29, west of G. P., Texas drilled its Pauley well to 5198 ft. and abandoned it. Northwest of Mr. Kelly's location, on sec. 13, 31-29, and in apparent line with the present extension of Mountain View, the Alpine Oil Co. went to 3775 ft. on part of the Di Giorgio ranch, and quit.

■ ■ ■

Vaca To Perforate

The Vaca Oil Exploration Co. well at Oxnard, after standing for several weeks preparatory to making a production test, will pull five inch perforated liner, plug from bottom at 2820 ft. up to 2160 ft., run in blank liner and gun perforate in the tar zone between 1865 ft. and 2160 ft. The well will then be hot oiled and given a pumping test. Many observers who saw the gas showings in the ditch believe that when the heavy tar can be eliminated, good production of 15 gravity oil with considerable gas can be had.



By the time this collection of inanities appears in print, the election will be over, and, as the rousty said when he opened his lunch box, "We'll know the wurst." .

■ ■

And after it is over, it will be just as well to remember that while it is almost impossible to fool all of the people all of the time, the average candidate is usually satisfied with a fairly respectable majority.

■ ■

Saying which we return to the prevalent scandal. Kirk Davies, for instance, chips in with a wierd story of a pumper who was accused of having played hookey from church to attend a horse race. The assertion was quite unfounded, however, and the pumper produced a string of fish to prove it.

■ ■

Then there was the oil worker who quit his job on a question of policy. The boss didn't think it was policy to keep him.

■ ■

And Pat Tracy has suggested the name "Yellowtail" for the pumping station that lies at the end of the line.

It is our impression that the guy who wields the rod is usually the one who lies at the end of the line.

■ ■

Joe Scanlon, on the other hand, talking of a stenographer who had worked for five different bosses, described the lady as being on her fifth lap.

■ ■

And Dub Russell vouches for the fact that a certain golf enthusiast took six shots to get out of a sand trap—one mashie, and five shots of rye.

■ ■

Also when a group of Avenal boys were discussing the big question of lunch a few days ago, George Thompson, the Polvadero founder, dismissed the entire conversation as empty chatter.

■ ■

Being interviewed by Earl Stillwell, the applicant volunteered the information that he had once been a taxidermist. "Okay," says Earl, "Let me see you do your stuff."

■ ■

It was Earl, you know, who asked another candidate if he had ever been bothered with flat feet, and was told, "Yes. One gave me a ticket just yesterday for parking too close to a fire hydrant."

■ ■

And the ambitious young fellow at the boarding house says to his buddy: "Listen, Bill. If I'm still studying when you get home from the dance, wake me up. Willya?"

■ ■

Bill Waddell now spins a pathetic yarn about a big hearted production man who gave his wife a free hand, and she slapped him with it.

■ ■

But cheers us up also with some real good news: It seems that the missing child of the Maricopa oil executive has at last been found, and is none the worse for his experience. The kid was found under a Sunday newspaper.

■ ■

These Sunday papers are a distinct hazard in the home, and almost warrant the wearing of safety helmets. We heard recently about one youngster who was badly crushed when the Sunday edition fell off the piano.

■ ■

And Jack Carter points out that the bird who is always seeing red, as a rule can't see beyond his nose.

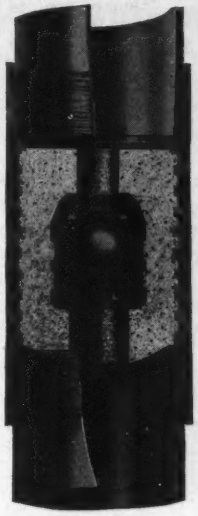
(See above at right)

When a Baker Cement Float Collar is used in setting casing, you should have a strong, drillable guide-shoe on the end of the string.

You can core immediately below the shoe, or drill safely ahead without any danger from metal fragments when you use a . . .

BAKER CEMENT GUIDE CASING SHOE

Many Modern Operators prefer to have a "float" valve one or two joints above bottom, to serve as a "Stop" for the cementing plug, and retain all cement "Tailings" inside the casing.



They use the easily drilled-out but strong

BAKER CEMENT FLOAT COLLAR

(See below to left)

But, of course, even a red nose is something to look forward to.

■ ■

"How do you feel this morning?" asked the chief clerk over the phone of the usually cranky superintendent. "Fine as silk," was the unexpected reply. "Excuse me. Wrong number," he apologized.

■ ■

"It used to be," according to Ernie Blanck, "that young men had to go to college in order to acquire polish. Now you can get it at almost any service station."

■ ■

And Spud Tyler notes that some people go out for a constitutional every evening, while others keep it in the house.

■ ■

It was one of Spud's Maricopa pals who used to bemoan the fact that he never could get a good sleep his first day in a strange church.

■ ■

We are also very much distressed to hear from Bob Thomas that one of his Arizona cowboy friends recently broke another horse. They must be very careless, these punchers.

■ ■

The real definition of strategy, according to Holly Hayter, is when you're out of ammunition but keep right on firing.

■ ■

In conclusion, remember that even when you get the best of some people you still haven't got much.—R. S.

West Long Beach, Wilmington, Flood Control In Throes of Big Leasing Campaign

WEST LONG BEACH and the adjoining parts of Wilmington, the County Flood Control, Nigger Slough, the Seaside tract and the Back Bay tract are all in the throes of a great leasing campaign. Representatives of major oil companies, of a number of the larger independents and of some lesser interests are extremely active. The steady eastward march of Wilmington drilling operations, the feeling that General Petroleum's Terminal No. 1 will be a big producer, the belief that the tidelands will quickly be thrown open to whipstock development and that the oil structure found by General Petroleum, as well as, perhaps, a parallel structure will probably extend under the sea, and the quite common belief that more oil fields will soon be needed, has plastered the whole area outlined above with leases.

No one company or group of companies has a monopoly of the leasing, although Bankline and General Petroleum are in the lead. Sovereign, Majestic, Harbor Drilling Co. and several companies controlled by the same interests are holding acreage. The Texas Co., Shell, and probably others have acquired large tracts.

Classification Yards

W. C. (Jack) Long of Long Beach has leased, from the City of Los Angeles, 214 acres, comprising parcels 1, 2 and 3, of the Classification Yards, located at the west end of Hill Street, Long Beach, and east of Truck Highway. The property is in Wilmington just over the city line from Long Beach. All the adjoining area of Long Beach is closed to drilling, so until the voters agree to open it there can be no drainage from that side, and wells on the classification yards will, of course, be free to drain the adjoining property so long as wells are drilled straight.

Material for the first Long well is being moved in this week. The derrick is up at the foot of Hill Street and Nigger Slough. The nearest drilling well is the Gauthier, 2000 ft. southwest and in Wilmington, down 3444 ft. at last report and coring in oil sand. This well has checked with the Bankline as some 300 ft. lower structurally, Bankline having come in at 3168. Bankline is about half a mile southwest of the Long well-site. Mr. Long expects to have to go some 3700 ft. to get commercial oil, this being in accordance with A. A. Carrey's geological surveys.

Mr. Long's attention was drawn to this property by the unsuccessful attempts of the late Joseph B. Dabney to lease it years ago. Mr. Long was then Mr. Dabney's lease agent.

Taxpayers May Recover Loss

Discovery of oil on the Classification Yards land will pay Los Angeles royalties which may bring back to taxpayers some of the huge sums thrown away when the land was acquired with the idea of building a municipal railroad to the harbor, a scheme which collapsed when the increasing use of trucks reached a point which convinced everyone that no railroad was needed.

Owing to the stand taken by the city, Mr. Long is compelled to drill his first well himself, although he had organized the Twin Harbor Drilling Co. for that purpose. City authorities feared a stock or unit selling campaign while the land was still unproved.

Surrounding the Long lease and in its close vicinity are three Bankline community leases, one or more General Petroleum leases, at least one Shell lease, and one of The Texas Co. No more has yet been made to drill any of these holdings. The prohibition against townlot drilling is making it more difficult for smaller interests to get land.

West Long Beach Leases

Discovery of oil along the east line of Wilmington is expected to force a resubmission to popular vote of the question whether to allow drilling in West Long Beach, the Seaside and Bay Shore tracts, all of which are plastered with leases. These areas were all zoned against drilling, and practically all the West Long Beach area was declared a residential district. Demand of property owners to be allowed to test their land will almost certainly force the issue to a vote.

The Seaside and Bay Shore tracts, located along the ocean front, Terminal Island, divided between Long Beach and Los Angeles, appear in a somewhat different category. They are divided between industries and residences, the latter nearly all of extremely inexpensive structure and of no great value. Residents of the district itself have been known to refer to it as "shanty town", a title which is too extreme for more than a small section. Nevertheless none of the property owners are likely to protest drilling. All may be expected to welcome it.

Should the voters extend state permission to whipstock wells into the ocean, submarine prospecting will be quite likely in the near future, with the derricks placed in an area now of limited value.

Mr. Long says he has offered the city of Long Beach a $25,000 bonus for 180 acres it has acquired for park purposes on the water front. Owing to the present zoning by the voters years ago, the offer has been filed for possible future action.

■ ■ ■

Wildcat Plans Test

Bottomed at 1100 ft., the East Edison Oil Co. plans an early test of its well on sec. 21, 30-30, Tejon ranch, due east of the Edison field, but on a distinct structure. Successful completion of the well will open a new California field. The company, formed by a group in Taft, has subleased its land from the 101 Oil Co., which holds the original lease from the Tejon Ranch Co. M. N. Young, president of the 101 Oil Co.. is quite confident that the well will develop production.

■ ■ ■

Associated Quits Avenal 1

Associated has abandoned its Avenal No. 1, sec. 35, 23-17, Kings county, west of Kettleman Hills, bottomed at 3080 ft.

California Field Stocks Decrease 74,963 Bbls.; 2,832,433 Oct. 1

FIELD STOCKS on hand Oct. 1 in California amounted to 2,832,433 bbls., 74,963 bbls. less than on hand Sept. 1, which amounted to 2,907,396 bbls. September crude oil shipments were 17,281,236 bbls. Total crude oil produced in California during September, which includes all oil lifted to the surface, amounted to 17,264,156 bbls., a daily average of 575,472 bbls. Net commercial production, or oil available to the market after deducting shrinkage, oil used on leases, etc., totaled 17,206,273 bbls. for September, or 573,542 bbls. daily.

Field stocks on hand for the San Joaquin Valley totalled 1,374,169 bbls., off 41,867 bbls. from the Sept. 1 total of 1,416,036 bbls. September shipments totalled 7,845,597 bbls. Total crude oil produced in this area was 7,836,450 bbls., 261,215 bbls. daily, while net commercial production for the region amounted to 7,803,730 bbls. for the month, or 260,125 bbls. per day.

Coastal District

Coastal field stocks on hand Oct. 1 amounted to 297,104 bbls., an increase of 13,874 bbls. over stocks of Sept. 1 which amounted to 283,230 bbls. September shipments of crude from this area totalled 1,824,497 bbls. Total crude oil produced during September was 1,844,130 bbls., a daily average of 61,471 bbls. Net commercial production was 1,838,371 bbls., or 61,278 bbls. daily.

Los Angeles Basin

In the Los Angeles Basin field stocks on hand Oct. 1 amounted to 1,161,160 bbls., 46,970 bbls. less than were on hand Sept. 1. During September, 7,611,142 bbls. of crude oil were shipped out of the Los Angeles Basin. Total crude oil produced was 7,583,576 bbls., a daily production of 252,786 bbls. Net commercial production amounted to 7,564,172 bbls. for September, which was a daily average of 252,139 bbls. for the Los Angeles Basin.

G. P. Adds New Areas To Oil Price Schedule

THE GENERAL PETROLEUM Corp. of California recently announced a new price schedule for purchases of crude oil at the well. The change was effective Oct. 14 and effects only oil of 30 gravity or above at San Miguelito, Padre Canyon and Rincon.

In the General Petroleum schedule, listings for San Miguelito and Padre Canyon are added to that for Rincon. The revised schedule follows:

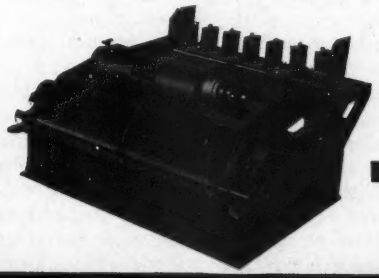
Gravity	Price per bbl.
30-30.9	$1.10
31-31.9	1.14
32-32.9	1.17
33-33.9	1.21
34-34.9	1.25
35-35.9	1.28
36-36.9	1.32

■ ■ ■

Kohlbush Derrick Up

H. S. Kohlbush has the derrick up for a new well at Edwards & Ellis street, Huntington Beach, one more to be drilled in the Dunlap area.

KEEPS MUD CLEAN AT *LOWEST* COST



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Fractional Analysis Problems

BY EDGAR E. SHAFER, JR.

Gas Research & Engineering Service

ALTHOUGH laboratories have no particular styles to keep up with, the field tester, the gas analyst, and the plant manager are constantly being confronted with changing conditions. Questions come up daily as to whether the equipment or methods being used are particularly suited to the problems in hand. Even the simplest routine test must faithfully reflect the changes which guide the plant superintendent. Much of his experience is based on application of results of patient research by his laboratory, and tedious accumulation of data. Therefore the simple things by which he anticipates trouble in the plant, or losses in production, merit careful study.

Suppose you are suddenly given the job of obtaining a series of five samples of natural gasoline to be analyzed for careful comparison of the light constituents. Four of these samples may be obtained from the usual pressure storage tanks with convenient sampling connections for water displacement in the complete absence of air. The other sample must be obtained from a large tank with a floating roof. The roof rides right down on the surface of the gasoline and you can reach it through a covered opening about a foot wide. The usual procedure has always been to lower a weighted bottle through this opening, to jerk the cork out of the bottle well below the surface, and to haul the bottle of desired sample back to the surface.

But now you are required to duplicate the procedure you are using to take the other four samples, that is, by displacing water out of a sample bomb with the gasoline under non-weathering conditions and in complete absence of air. While you are going all over the tank to make sure you haven't overlooked a connection of some kind, the rest of us will talk about other things that have bothered us.

Inexpensive Sample Bombs

Someone wants to know how to make some sample bombs that won't cost too much, won't be too heavy, will serve more than one purpose but will stand extra high pressure. An illustration herewith shows a bomb that fills the bill very well. Two steel bull-plugs have each been tapped on the end for a short extra heavy nipple, all burrs have been dressed off on the inside, a good stout butt-weld, and there we are. The valves are throttling type needle valves. Four or six-inch standard plugs, depending on how much sample you want. These bombs can be used for taking gas samples of 450 to 1000 pounds per square inch. Or as you see, they match the sketches shown in the bulletin of the California Natural Gasoline Association on the new method of making Reid Vapor Pressure determinations on gasoline.

Conditions under which samples must be taken are always undergoing slow progressive changes. When a new field is brought in there is generally plenty of gas under high pressure. This gas is not very "wet", that is, it will have from three-quarters of a gallon to two gallons of recoverable gasoline in 1000 cubic feet of gas. The fact that sometimes a high pressure gasoline plant will make a lot more gasoline than tests show is in the gas before it is processed, has caused much embarrassment. The indications are very strong that such gases are two phase propositions. One phase being the gas itself, the other phase, oil which is being carried out of trap in the form of mist whose particles are extremely small. The latter might also lead to a thin liquid film travelling along the pipe with the gas. Special sampling connections have been devised to sample this type of gas. It is always good practice to place bombs containing such samples on a heater overnight.

The problem of getting a repre-

New type of sample bomb

One kind of fractionating column

sentative sample of gas is a serious one. If the sample can be taken over a period of time, twelve to twenty-four hours, or in accordance with all fluctuations in flow and temperature conditions, the results of tests are much more satisfactory. Gas samples by water displacement can be taken over almost any period of time, but care must be taken as to what type of gas is sampled in this way. Gases containing high percentages of carbon dioxide or whose gasoline content is of a heavy nature should not be taken in this manner. The carbon dioxide goes into solution very readily under pressure, and the heavy gasoline fractions condense out under the slightest provocation so that if you drain all the water out of the bomb, the loss of a few drops of gasoline along with it will cause a large error.

Purging the gas bomb by blowing gas through it for a period of time was one of the first methods of getting a sample.

This has been modified so that a time sample may be taken quite satisfactorily. After the bomb has been purged, the pressure is released, and the valves shut. The bomb now contains one atmosphere of gas (14.7 lbs. absolute pressure) and by using a test gauge an integrated sample is taken by building the pressure up 14.7 lbs. for each time interval selected or as far as the total line pressure will permit.

Use of Vacuum Pumps

The natural question that comes up is, how do you integrate your pressure units or get a time sample when the line has no pressure on it, but is already under a vacuum? One has to test this gas too. In fact, some plants have no pressure gas entering the plant at all. The accompanying illustration shows a typical compressor unit used for pumping gas out of a vacuum line. It is mounted just back of the cab of a light field truck and consists of a tiny gasoline motor driving a small compressor (in some instances, a small refrigerating unit such as is used in electric ice boxes) which has suitable outlet connections. This one shows the compressor connected to Charcoal Test Meters.

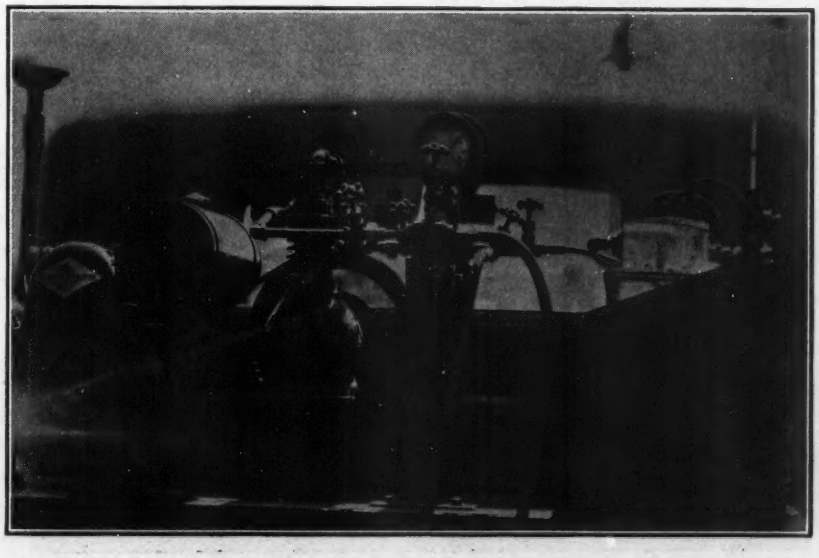
A very satisfactory method of obtaining an integrated sample with the apparatus shown, is to connect the sample bomb to the gas line so that the pump will pull gas from the line, through the bomb, before it is compressed. Let us suppose the gas line is at a pressure of 10 lbs. per square inch absolute which is less than atmospheric pressure. We will allow the pump to pull gas from the line through the bomb for about 15 minutes. Then we close the valve on the bomb nearest the gas line so that the pump now exhausts the gas from the bomb, and with a good pump we get down to say 29 inches of mercury on the vacuum side. Now we close the valve to the pump and open the valve to the gas line. The pressures equalize. We repeat this operation several times, close both valves on the bomb tightly and remove the bomb from the pump inlet to the pump discharge. For the next pressure increment we pump gas from the line to the bomb until a gauge on the bomb shows that we have gone from 10 lbs. absolute to 20 lbs. absolute pressure (this will be 5 lbs. on the gauge). The next increment will be to 15 lbs. gauge pressure and is about as high as one should go because of the danger of condensate dropping out of the gas going through the connections.

Taking Spot Samples

Practically all of the precautions that have been brought out or recommended so far apply especially to wet gases. In passing, an interesting point is brought up which seems to be generally approved. If it is found necessary to take a "spot" sample from a wet gas line, the best time to do it is between nine and ten in the morning or from three to four in the afternoon. A sample taken at either of these times seems to be most representative of a day's period. Dry gas samples do not require other than the usual care to see that the equipment being checked is functioning steadily.

The samples we have been taking up to this point have been intended for analysis. This is done by chemical means for such constitutents as oxygen, carbon dioxide, sulphides and mercaptans; by combustion, for methane and small traces of ethane; by low temperature fractional distillation, for the hydrocarbons from methane through the hexanes. Without the latter, most of the pres-

(Continued on Page 24)



Portable installation for taking sample from a vacuum line

Continental Earnings Up To 79c Per Share

CONTINENTAL OIL CO. earned $3,727,357.69 during the third quarter of 1936, as revealed by its financial report released at the company's offices here today. This is equivalent to 79 cents per share on the issued stock of the company, exclusive of the shares held in its treasury, and compares with earnings of $2,435,106.13, or 52 cents per share, during the similar period of 1935.

For the first nine months of 1936 the company earned $8,083,624.59, equivalent to $1.72 per share. The earnings for the same period of the previous year were $5,568,802.08, or $1.18 per share.

Gross operating income for the third quarter of 1936 was $21,203,866.71 and for the first nine months was $56,277,532.47, representing increases of $663,862.75 and $3,133,766.83, as compared with the corresponding periods for 1935. The reserve charges for amortization of properties during the current quarter and for the nine-month period amounted to $3,101,766.66 and $9,594,895.92, which exceeded reserve charges in the same periods of 1935 by $448,406.84 and $3,074,446.17, the increases being accounted for by larger intangible development cost expenditures. The company charges intangible development costs, in full, to earnings as expended. Such intangible costs during the third quarter were $1,962,247.15 and were $6,240,736.35 during the first nine months of 1936, equal to 41 cents and $1.33 per share, respectively, on the outstanding shares of stock of the company.

Nonrecurring income during the third quarter amounted to $697,754.47 and totaled $1,391,357.44 during the nine-month period.

Net current assets amounted to $30,562,217.23 and the ratio of current assets to current liabilities was 4.04 to 1.

Richfield Reports Operating Profit

FOR THE FIRST time since Richfield Oil Co. went into receivership it has reported for the period of three months and eight days ended Oct. 8, a consolidated net profit for itself and subsidiaries amounting to $553,708, after all charges, including depreciation and depletion, but before estimated income taxes. The report was filed by William C. McDuffie, as receiver in equity, who has now become trustee in bankruptcy.

Change Made

Previous to this odd length period, the receiver had been unable to report a net profit after depreciation and depletion charges. The odd period covered by the present report results from the fact that it is filed to show status on date of transfer from equity receivership to bankruptcy.

Preceding report filed by the receiver covered the six months ended June 30, 1936, and showed a loss of $324,257 after charges for depreciation and depletion.

Operating profit, before depreciation and depletion, for the period July 1 to Oct. 8, amounted to $1,590,799, and is credited in the receiver's report to vastly improved marketing conditions in the oil industry on the Pacific Coast. It compares with an operating profit of $1,555,315 for the six months ended June 30. Operating profit on the same basis for the last six months of 1935 amounted to $660,644.

Better Position

Consolidated net working capital postion improved by approximately $1,267,745 during the period ended Oct. 8. Total current assets as of Oct. 8 amounted to $17,400,879, against total current liabilities of $4,014,159, indicating a working capital of $13,386,720. This compares with current assets of $16,547,231, current liabilities of $4,428,256, and indicated net working capital of $12,118,975 as of June 30 last.

Costa Mesa Project To Start Redrilling

PREPARATIONS are underway to redrill, from about 3300 ft., the old well at 19th and Placentia, Costa Mesa, where a new derrick has been erected over the hole which has stood with all work suspended for some four years or more. Drilled originally by Jordan & Meine (Jerry Jordan, owner of the Associated's Jordan lease at Santa Fe Springs), the well was taken over by Ajax Petroleum Co., headed by E. R. Snyder, and carried down to 7262 ft. At that time Mr. Snyder believed he had oil but the well was not brought to production. Dissension among stockholders is said to have caused the suspension.

Reports credit Ajax with being the operator which will redrill the hole. This location is within about 1½ miles of the Mesa Oil Co's well on the Banning ranch overlooking Newport Beach which is to be carried down for a deep exploratory test.

■ ■ ■

Winger Acquires Acreage

H. D. Winger and associates of Los Angeles have acquired acreage in the vicinity of Weed Patch, extension of Mountain View, and expect to start work some time within the next 60 days. Further details of the location have not been given out.

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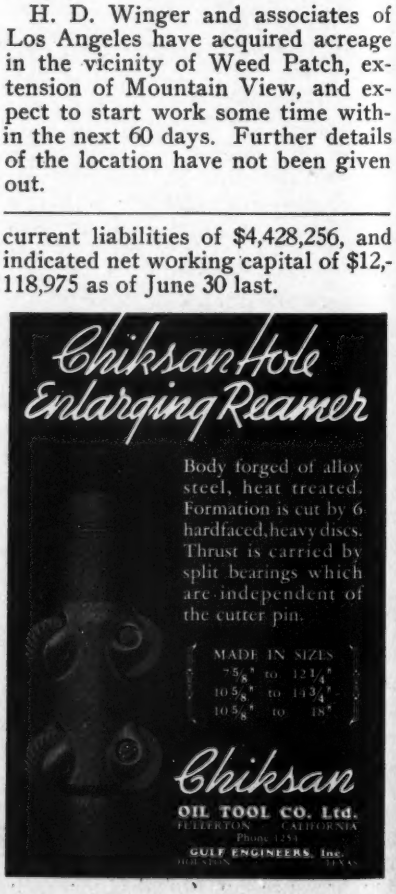
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Gasoline Plant Fire Hazards Described By N. C. Wells At C.N.G.A. Meeting

(Continued from Page 8)

lighting. The flashlight will suffice. In fact, conduits on cooling towers deteriorate so rapidly that they soon become a hazard. Gauge glasses should be well lighted, as should important pressure gauges, float operated sight drains, pumps, recorders, etc.

All lights should be vapor proof, including extension lights.

Flashlights. The requirements of a good flashlight for gasoline plant service are not always the same. However, some generalizations may be made. It should be of light weight, of the focusing type, not slippery, easy to pocket, vapor proof and satisfactory to the operator. If the operator likes it, he will use it. If it is safe as well, that is the flashlight to choose.

It should be checked constantly. Frequent breakage or lack of use indicates the wrong type of flashlight. When the front glass breaks it is no longer vapor proof. In one case a mechanic used such a broken model to view the interior of a compressor cylinder and touched the head of a stud with the globe. The result was a badly burned mechanic.

Noise. It is best to eliminate unnecessary noise, such as from exhaust steam. Many hazardous conditions are nipped in the bud by prompt detection, through the sound, of something new. To be able to distinguish between sounds, such as the noise of a gas leak in a cooling tower as compared to the sound of falling water in it, is advantageous.

Fire Fighting

The natural instinct upon first seeing a fire leads one to think of means of quenching it. In the case of any fire being fed by a continuous flow of flammable fluid this is wrong. The mere existence of the fire leads to confidence in approaching it and the desire to put it out immediately. The confidence in approaching it is right, the desire to extinguish the flame without first putting a stop to its source is wrong.

Minor Fires. Protection against minor fires such as are occasioned by repair jobs may be provided for by convenient location of small fire extinguishers. Sumps, or the accumulation in pools of oil or gasoline, may be protected by larger portable extinguishers. To minimize the effect of possibly igniting a surface of gasoline or oil, the contents of an extinguisher, or water, may be used before starting a nearby welding job.

Major Fires. From a fire-fighting standpoint the finest provision for isolating and extinguisihng a gasoline plant fire of any proportions is provided by the local fire department. This, of course, applies only to locations having such protection available. Other plants should be particularly well planned to provide for isolating and extinguishing fires of any conceivable origin.

Tank Fires. Few gasoline plants operate tanks that may be equipped to fight fire by means of a permanent fire quenching installation that may be operated by remote control. In refineries, crude oil storage tanks often ignite and burn over a period of time. The time element permits the use of some type of piped foam equipment.

Design Versus Operation

Design and operation of a plant are becoming more closely allied. The operator must have the experience and knowledge necessary to accept as practical and safe the product of the designer. The designer must have the knowledge of operation to assure this acceptance. Both must have in mind the earning power of the plant. Such an understanding will result in the safe design, construction and operation of a profitable gasoline plant.

■ ■ ■

Mohawk Gets Showings

Mohawk Petroleum is reported to have oil showings and to be preparing to set casing for a production test in its Earl Fruit Co. No. 2, sec. 10, 31-29, in the prospective southeast extension of Mountain View. The well is bottomed at 6160 ft., in the schist, and a test is said to have shown the existence of 40 to 45 ft. of oil sand. Casing is expected to be set around 6075.

Reports are that Shell has not had such good fortune as Mohawk appears just now to have. Its Greer No. 1, sec. 15, 31-29, just one section to the south of Mohawk, found the schist a few feet higher but did not get the oil sand.

Associated, sec. 3, 31-29, is making a series of formation tests this week. The hole is bottomed at 5465 ft.

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23,644

are a lot of days

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Bulletin No. 36 tells all

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Fractional Analysis Problems

(Continued from Page 21)

ent-day refinements such as high pressure rectification, production of the "liquid gases" propane and butane, would be unknown. One has only to listen to some of the old-timers talk of producing stable "casing-head" by putting a few steam coils in the storage tanks, to get an appreciation of the advances brought about by the ability of engineers to follow each individual constituent as it goes through the plant.

Method of Analysis

These constituents belong to what is known as the paraffine series of hydrocarbons. This series is principally noted for the fact that most of the members are practically chemically inert. From the analytical standpoint, this means that the chemist can not take a mixture of methane, propane, and pentane, dissolve it in acid or alkali, add reagents and end up with accurate percentages of each compound as he would with mixtures of metals or earths. For actual separation of different members of the series he had to resort to repeated distillations or use a selective absorbent such as highly activated charcoal. Finally an efficient fractionating column using liquid air as refrigerant was coupled with an ingenious device for measuring the gases distilled off. The credit for this goes to Walter J. Podbielniak. The successful pioneering of this apparatus took the accurate analysis of a natural gas or gasoline away from being a research problem requiring weeks to culminate, to a dependable test requiring one working day. Most of the changes that have been made up to the present time have been in the nature of refinements.

About six years ago, it began to dawn on the manufacturers of natural gasoline, especially on the Pacific Coast, that this commodity was not to be governed by gravity and distillation recovery alone. At that time, 96 recovery gasoline represented a very stable, highly desirable product. It contained about 75 per cent of pentanes and heavier, 25 per cent butanes and lighter, and could be blended into motor fuel in fairly high proportions with a resulting high quality fuel from the standpoint of good starting qualities and high anti-knock value.

The came the manufacture of a large amount of natural gasoline in the Kettleman Hills field. One could take a mixture of 60 per cent pentanes and heavier, with 40 per cent butane, and still meet 96 recovery specification. In cases where business was being done on an exchange basis, it soon became necessary to analyze the gasoline for the pentanes and heavier fractions in order to establish a pay-factor for equitable settlement. This was later replaced by the present elaborate price schedules based upon Reid Vapor Pressures. At that time, these different gasolines were being analyzed, and practically every gas laboratory had its own version of what a good fractionating column looked and acted like. As for procedure, well, it was every man for himself, and the result was a different answer in each case.

The California Natural Gasoline Association formed a committee of

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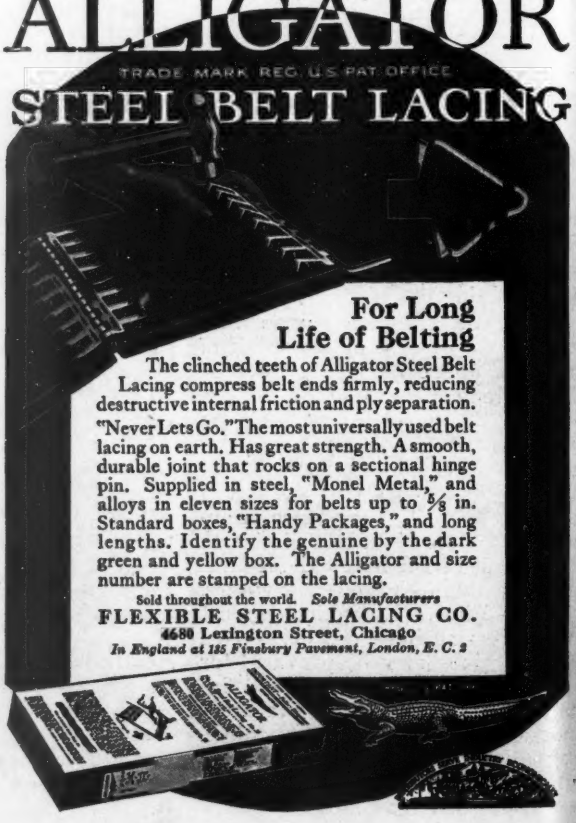

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men who were entirely familiar with actual handling of the apparatus. This committee took features of the Podbielniak column, and that separately developed by the research department of the Standard Gasoline Company, and evolved a fractionating column and a procedure for the use of it which has been adopted by most of the laboratories in California for exchange or referee work.

Present Equipment

The present Podbielniak fractionating column consists of a vacuum jacket for insulation, inside of which is a highly polished metal reflector to keep heat from radiating to the fractionating tube. The kettle and fractionating tube are one piece, the tube being held inside the jacket by means of a cork at top and bottom to keep the moisture out and also form a dead-air space.

The column adopted by the California Natural Gasoline Association consists of a fractionating tube integral with the jacket which is silvered with a window the entire length of the tube and highly evacuated. The condenser is a separate piece which is fastened to the top of the fractionating column by means of a cork joint. A photograph is shown of a column without the condenser jar on top. It has a special kettle sealed on the bottom for testing gases. The bottom part of the kettle is accurately divided so that the gasoline fractions can be measured as liquid, then vaporized to give a fairly accurate vapor equivalent. This type of kettle is useful with gases of high gasoline content which tend to freeze, or with light liquids such as stabilizer reflux, high pressure accumulator liquids, and liquid butane.

C. N. G. A. Standard Column

Although the standard column of the California Natural Gasoline Association has a fractionating tube three feet in length, columns of similar dimensions but with four feet of fractionating tube have been constructed and operated successfully. The results obtained with these columns do not differ from the results obtained on the three-foot columns, but the rate of distillation can be maintained at the maximum recommended by the Association's analysis procedure to much greater degree. The longer column gives cleaner cuts with liquid butane samples and gases from cracking processes which contain unsaturates.

Another very interesting column which is being used successfully in one of the larger laboratories, is also equipped with a four foot fractionating tube integral with a large gasoline kettle which will accommodate as much as 2½ liters of sample. Removal of the light fractions down to the pentanes and heavier fractions is done with precision, and in addition, there is enough material left to properly evaluate by such tests as vapor pressure, distillation, anti-knock, specific gravity, or to make special blends which can be tested by actual performance in a motor. A precision thermometer inside of the kettle also permits the topping of a light gasoline to a specified vapor pressure in fairly large quantities with precision.

One of the most prevalent questions now being asked is, how satisfactory is the rectified charcoal test proving to be? This test, instead of giving a value for the entire gasoline content of a wet gas, gives the amount of 20 lb. Reid vapor pressure gasoline which the plant should be able to very closely approximate. While the test requires much more time in the field, it has given results which are much more consistent and also more equitable from the standpoint of royalty distribution. It has been especially valuable to plants attempting to handle recycled gas, formation gas in vacuum lines, all of which have different characteristics.

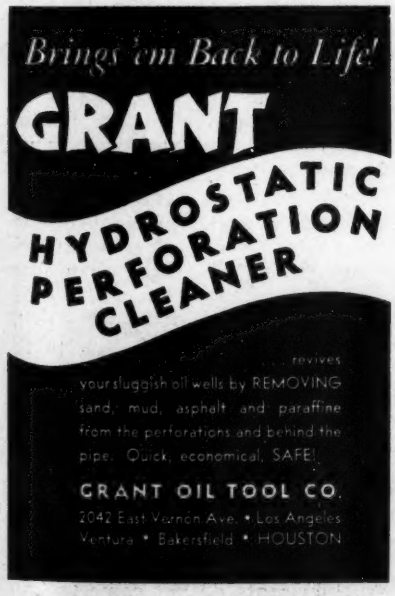
And now we are ready to get our sample from the tank with the floating roof. The other four bombs have been filled from pressure storage and the last one is just coming up. It was taken this way. The sample bomb was filled with water as the others had been. A stout cord was fastened to one end. Then the bomb was vertically immersed, about half its length, and by reaching under the surface of the gasoline the bottom valve was opened wide. By means of the cord, the bomb was lowered into the gasoline until the top valve could just be reached. This was opened and the bomb rapidly lowered to a point well below the surface. In due course of time the water trickled out of the bomb and was replaced with the desired material. The bomb was brought to a point near the surface, the top valve closed, then the other, and the bomb was brought out full and ready for the laboratory.

■ ■ ■

Associated Quits DiGiorgio 2

Associated has abandoned its Di Giorgio No. 2, sec. 3, 31-29, after going to 5630 ft., thereby setting another limit to the southeastern extension of Mountain View. However, the Mohawk Earl Fruit Co. No. 2, sec. 10, 31-29, was standing cemented over the week end at 6070, with bottom at 6166, and Shell's Greer No. 1 was testing for water after cementing at 5710, with bottom at 6170, sec. 15, 31-29.

Still further south, at Arvin, General Petroleum is drilling below 7100 ft. and still in the Chanac where it finds small streaks of oil sand. The company wants to get the Santa Margarita, which is the big source of oil at Mountain View, but it is discouragingly deep. No predictions are made as to how deep, for every guess thus far has missed the mark.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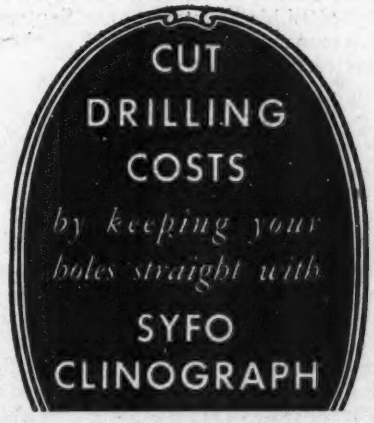

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Refineries Cut September Runs; Gasoline Demand Up; Lubricants Market

FIFTY-EIGHT ACTIVE California refineries ran to stills, during September, 15,750,512 bbls. of crude oil, daily average 525,017 (U. S. B. M. report), equal to 96.6% of the total September production of crude (A. P. I. final figures). These runs represent a total decline of 958,098 bbls., a daily average drop of 21,689, as compared with August, but a total increase of 304,880 bbls., daily increase 10,163, over September, 1935.

Out of September current production of 17,375,122 bbls. of crude, 1,842,301 bbls. were transferred to stocks of heavy crude and fuel residuum. Retransfers threw into the month's current supply of oil destined to the refinery stills 160,718 bbls. from other stocks. Of this last, 158,590 bbls. were of heavy crude. The total of heavy crude run to stills came to 518,565 bbls., or 359,975 more than the amount retransferred, indicating, it appears, that this last amount was taken from the month's current production of heavy crude. From these facts it is indicated that September total production of California non-gasoline-bearing (heavy) crude came to 2,202,275 bbls. This last figure is a substantial increase in production of non-gasoline-bearing crude over August, during which month, with one extra day to consider, the total current yield of this oil is indicated as having been only 1,701 800 bbls.

Total daily capacity of California's 58 active refineries is listed as 782,660 bbls., showing that September runs were equal to 67% of capacity.

Supply Less Than Runs

After deducting from the total September transfers of non-gasoline-bearing crude from the month's total production **the month's supply of gasoline-bearing crude is shown to have been 15,532,821 bbls., 217,691 bbls. less than the month's total runs of crude to stills.** In addition to these facts, 6,020,032 bbls. of so-called non-gasoline-bearing crude and residuum were used during the month for cracking to make needed gasoline.

Besides the crude oil run to stills, California refineries utilized a total of 1,189,213 bbls. in the manufacture of commercial gasoline. They also ran 195,184 bbls. of unfinished oils to stills which, together with the amount of natural gasoline run to stills, as distinct from blending, brings the grand total of September runs to 16,133,609 bbls.

September exports of crude oil totaled 1,154,846 bbls., all of which went to Pacific ports, most, if not all of it, to Japan.

Gasoline Supply and Demand

California produced a September total of 6,686,981 bbls. of motor fuel: 3,416,374 bbls. straight run, 1,176,542 blended natural gasoline, and 2,094,065 the product of cracking. The above output was 411,450 bbls. less than August's total, but 552,565 more than the total of September, 1935. The greatest increase this year over last is in the output of the cracked gasoline, the September total of which last year was 1,523,452 bbls., or 570,613 less than this year. Daily average of September's output was 222,899 bbls. this year.

September imports of gasoline from other states into Pacific territory, none of which so far as recorded actually reached California, were only 8179 bbls. October imports will be more than eight times this amount due to the direct shipment from the Texas Gulf Coast of about 70,000 bbls. of gasoline by the tanker Phoenix.

September demand for California gasoline totaled 5.344,909 bbls., including Alaska-Hawaii and rail and truck shipments to interior points. September daily average domestic demand was 178,163 bbls., that of August, 173,470, and that of September, 1935, 153,861. In other words, September demand for gasoline in the domestic area was 24,302 bbls. per day, or 15.79% more this year than last year.

September, 1936, shipments of California gasoline totaled 1,818,667 bbls., daily average 60,622. Destinations follow: Pacific foreign, including Canal Zone, 660,085; Atlantic foreign, 548,836; Intercoastal, 609,746 bbls. August daily average shipments were 53,282 bbls., September, 1935, were 27,914.

In other words, this year September foreign exports and intercoastal shipments of California gasoline were 117.17% greater than last year. As stated above, domestic demand shows an increase of 15.79%. The percentage increase in shipments was, therefore, some seven times more than in domestic demand. Increases in shipments by destinations this year follow: Pacific, 13%; Atlantic, 117%; Intercoastal, 123.4%.

Data as to stocks of gasoline will be found below in the table of all stocks.

Market for Lubricants

September, 1936, demand for lubricants in Pacific Coast markets and for exports therefrom totaled 284,019 bbls., 9433 daily. The September, 1935 demand was 225,253 bbls., making this year's increase over last 58,761. September, 1936, demand in Pacific Coast territory was 189,522 bbls., against 163,708 the same month last year, a 25,814-bbl. increase for 1936. September shipments this year were 94,497 bbls., against 61,550 last year.

This year's more than 50% increase in shipments of lubricants during September was due to the demand in Pacific foreign ports which was practically double that of last year, and the existence of Atlantic foreign demand, which did not exist last year. Pacific foreign trade took 94,941 bbls. during September, 1936, against 48,081, while September demand for Atlantic foreign ports this year came to 1518 bbls. against only 90 last year. On the other hand, intercoastal shipments during September, 1935. of 13,379 bbls. dropped to only 789 during September, 1936.

Manufacture of California lubricants during September, 1936, was much smaller than during August, 1936, or September, 1935, being only 135,002, against 241,878 during August and 161,749 bbls. during September, 1935. Imports of eastern lubricants during September, 1936, totaled 70 490 bbls., against 56,171 during August, and 41,391 during September, 1935. No explanation is obtainable as to the cause of the September decline in output this year. Imports may vary from month to month because of transportation conditions.

September shipments of lubricants (94,497 bbls. as above stated) were 33,578 bbls. more than August's.

The notable factor appears to be that the market has grown to the point where California exports more of its own lubricants than it imports of the Eastern lubricants. September's imports of 70,490 bbls. were equal to only 37% of the Pacific Coast demand, and the outbound shipments exceeded the imports by 24,000 bbls. It should be remembered, too, that some of these Eastern lubricants do not come to Cali-

fornia but to competitive border territory.

Diesel and Fuel Oil

During September, California refineries produced 8,323,978 bbls. of fuel residuum, to which must be added 4,220,493 bbls. produced by cracking, and 6,020,493 bbls. used in further cracking must be subtracted. Net production is thus left at 6,524,439 bbls., to which amount is added the month's net transfers of non-gasoline-bearing crude, which brings the September net current supply to 8,209,044 bbls.

Pacific Coast September demand for fuel came to 7,232,445 bbls., shipments to 1,001,494 bbls., all to Pacific foreign ports, making a total market of 8,233,939 bbls., besides unexplained losses of 235,597, which brought the total current demand to 260,492 bbls. more than the current supply.

September current supply of diesel and gas oil was 2,050,827 bbls., which exceeded the total current demand by 196,600 bbls.

Stocks on Hand Compared

Stocks of all California oil were reduced during September by 2,409,696 bbls., which is 124,711 more than the A. P. I. preliminary estimate. The following table shows all stocks Sept. 30, 1936, in barrels, as compared with Aug. 31, 1936, and Sept. 30, 1935.

	Sept. 30, '36	Aug. 31, '36	Sept. 30, '35
Gasoline-Bearing Crude	34,123,055	35,476,574	34,980,647
Natural Gasoline	2,067,148	2,168,958	1,850,605
Finished Gasoline	12,797,515	13,397,750	10,593,337
Kerosene	1,147,430	1,192,657	1,655,741
Lubricants	1,032,842	1,123,589	914,704
Gas-Desel Oil	9,010,602	8,814,002	6,927,476
Residuum, Non-Gasoline Bearing Crude Oil	64,564,208	64,824,700	58,518,238
Asphalt-Road Oil	469,877	635,925	589,325
Coke, etc.	341,587	363,897	562,173
Naphtha Distillates	1,820,724	1,722,153	1,375,810
Unfinished Oils	5,379,988	5,444,467	5,265,465
Total	132,754,976	135,164,672	123,233,521

The estimated amount of gasoline contained in the above stocks of naphtha distillates totals 1,004,308 bbls.

From the above comparison it will be seen that stocks on Sept. 30, 1936, were 9,521,455 bbls. greater than on Sept. 30, 1935, due to increases during the last months of 1935 and the first months of 1936. The principal increases over the 12-month period were 6,045 970 bbls. of non-gasoline-bearing crude and fuel residuum, 2,083,126 bbls. of gas-diesel oil, 2,204,178 bbls. of finished gasoline, and 444,914 bbls. of naphtha distillates. The principal decline over the 12-month period was 857,592 bbls. of gasoline-bearing crude.

Index Numbers Show Only Slight Variation

OIL INDEX NUMBERS of the California Oil and Gas Association, indicating comparative operations of the California petroleum industry for September, vary but little from the August figures for most items. Crude oil production rose from 90.11 in August to 90.26 in September and total new supply rose from 90.03 to 91.05. Domestic demand rose from 99.60 in August to 106.67 in September, total shipments rose from 75.89 to 84.55, and total market demand rose from 91.65 to 99.27. Total stocks on the last day of September had an index number of 84.43 as compared with 86.14 for the last day of August.

For the first nine months of 1935, crude oil production was 10.19% more than for the same period of last year, total imports were 42.20% greater, and total new supply was 10.67% greater. Crude run to stills was 12.40% more. Gasoline from natural gasoline was more by 8.16%, straight-run gasoline production by 11.72%, and total gasoline and distillate production by 16.75%. Kerosene production was 21.79% less for the period, lubricants production 19.37% more, gas oil and diesel production 8.99% more, and fuel oil production 15.56% more. Domestic demand was greater by 9.11%, and total market demand was greater by 6.47%.

For the nine-month period, total crude shipments were 16.85% less, natural gasoline shipments 33.91% less, fuel oil shipments 4.50% less. and asphalt shipments 9.34% less. Shipments of gasoline and engine distillate were 11.31% more, kerosene 8.59% more, lubricants 27.80% more, and of gas oil and diesel oil 18.33% more.

Stocks on the last day of September were 7.54% greater than on the corresponding day of 1935. Wells producing at the end of the nine-month period numbered 12,018, a decrease of 3.87% from the same period last year.

■ ■ ■

Old River Derrick Up

British American, Inc. has completed erection of a derrick and is setting boilers for its initial project in sec. 21, 31-27 in the Old River area, nine miles southeast of Shell's Stevens No. 1. This test is scheduled to spud in Nov. 6.

A. P. I. Basin Chapter To Elect 1937 Officers

ELECTION OF OFFICERS for the ensuing year will be a feature of the next meeting of the Los Angeles Basin Chapter of the A. P. I., to be held in the Shell Oil Co. Recreation Hall, Long Beach, on Tuesday evening, Nov. 10. All interested oil men are cordially invited to attend, whether or not they are members of the Institute.

The program will include the following talks:

"Two Views of the Petroleum Fire Hazard," by John T. Howell, Fire Protection Engineer, Union Oil Co.

"The Making of Oil Well Cement," by Otis D. Small, Pacific Portland Cement Co.

"The Story of the Coast Guard," with Squawkies (Talking Motion Pictures) to be given by an officer of the Coast Guard.

The meeting will start promptly at 7:30 P. M., and will be followed by light refreshments.

■ ■ ■

Laguna Wildcat Starts

Nine Springs Oil Co., headed by E. J. Pettijohn of San Diego, and backed, it is understood, mostly by the same interests that drilled the 6000-ft. wildcat near the Mexican border last year, will drill a wildcat well on the Laguna Ranch, northern Santa Barbara county. Material has been moved in.

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Admiral Oil To Drill Pico Canyon Location

ADMIRAL OIL CO., headed by Cliff Baker, president of Vanguard Oil Co., with Louis H. Evans as geologist and engineer, will start a well in the immediate future on the nw¼se¼ sec. 23, 3n-16w, Newhall. The location is on the east end of the Old Pico anticline, as it has been traced by geological studies. On this anticline is the first producing well ever drilled in California in Pico Canyon, put down by the former Pacific Coast Oil Co., and now one of a group owned in fee by Standard Oil of California.

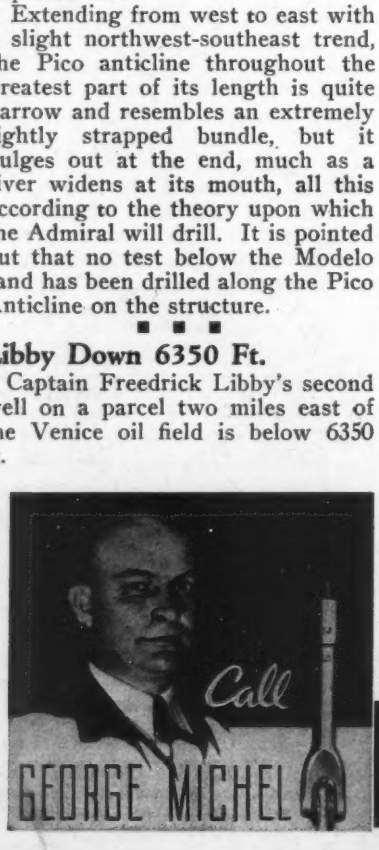
None of the old Standard wells in Pico and Wiley Canyons are bottomed below 1500 ft., which means that none have gone deep enough to tap anything but the Modelo sand, but Vaqueros has been tapped to the west and found productive further west and still further west, in Santa Susana and Simi, wells are producing from the Sespe. Upon the strength of these findings, Mr. Evans figured that oil should be found in the Vaqueros around 4500 ft. on the Admiral property, with the Sespe below to be penetrated and explored later.

Extending from west to east with a slight northwest-southeast trend, the Pico anticline throughout the greatest part of its length is quite narrow and resembles an extremely tightly strapped bundle, but it bulges out at the end, much as a river widens at its mouth, all this according to the theory upon which the Admiral will drill. It is pointed out that no test below the Modelo sand has been drilled along the Pico Anticline on the structure.

■ ■ ■

Libby Down 6350 Ft.

Captain Freedrick Libby's second well on a parcel two miles east of the Venice oil field is below 6350 ft.



North Beach Wildcat Spudded Near Refinery

GEORGE CLAYTON has spudded in his second North Beach wildcat on Paramount Blvd. directly across the road from the Richfield refinery at Hynes. The location is half a mile southeast of the first Clayton well drilled to 6866 ft. just east of Atlantic Avenue at Houghton Park, and in the opinion of Mr. Clayton and that of his geologist, Dr. Gerard Henny, is on the same structure, one never before drilled and distinct from any now producing.

Dr. Henny holds that the present location is the geological high. After studying the log and cores of the first well he advised Mr. Clayton that he had an edge location and should quit and move east. Mr. Clayton says that he found the formation dipping quite sharply, as much as 40°. He did not core the shallower levels and Dr. Henny believes he went through an upper sand which should be found at about 3700 ft. in he second well. Mr. Clayton cored 10 ft. of oil sand at the bottom of the old hole but did not test it.

In the first well, a quicksand was encountered a little below the surface and it is the intention to go just below this to set surface casing. A trace of oil and gas at barely 300 ft. is reported by Mr. Clayton, merely as an interesting point although probably of no significance and quite likely a seepage.

The structure is considered as about 1½ miles wide and three miles long. Mr. Clayton has some 200 acres leased. The venture is being financed by himself and one associate, the latter a wealthy man amply able to carry the thing through. Equipment has been purchased outright.

A native of Joplin, Missouri, coming to California and Long Beach some 16 years ago, Mr. Clayton is making his first venture in oil. His first well was drilled evidently under handicaps but he stuck to it, and at the last he did the drilling himself.

■ ■ ■

Ed Tompkins remarks that a pedestrian is a case of the survival of the flittest.

Engineer Sees Industrial Activity at High Level

THAT THE INDUSTRIAL activity of California and adjacent western states takes exceptionally high rank in comparison with other sections of the nation and the world is the opinion of William G. G. Godron, chief engineer of the technical division of the Socony-Vacuum Oil Co., who has just returned to his headquarters in New York after conferences in Los Angeles with officials of General Petroleum Corp.

"Particularly marked in California," said Mr. Gordon, whose duties take him to every country of the globe, "is her record as the biggest airplane producing section of the union, and her outstanding achievements in automobile assembly sales and service.

"We are conscious of the marked uptrend here because the men on our staff of lubricating engineers are constantly called into consultation to develop lubricants essential for improved mechanical devices which western industry is adopting. Our estimate of the potentialities of the area is also based on the volume of industrial lubricants dispensed this year by our affiliated company, General Petroleum Corp.

"Many mechanical and motive power changes are taking place in this section today, in order that production may be speeded up and made more efficient. These changes are noted particularly in the development of high-speed diesel motors, now used in greatly increasing numbers for trucks and tractors, new type motors of greater power to meet the needs of aviation, and new type motors and bearings now being installed in industrial plants."

While in Los Angeles, Mr. Godron addressed a meeting of the S. A. E. He also took part in conferences at the home offices of General Petroleum, for which company he recently conducted classes in technical subjects. Mr. Godron has been associated with Socony-Vacuum Oil Co. for 20 years, and confers with engineers in every country of the globe. Eight months of the past two years were spent in Europe. Most of his traveling is done by airplane or motor car.

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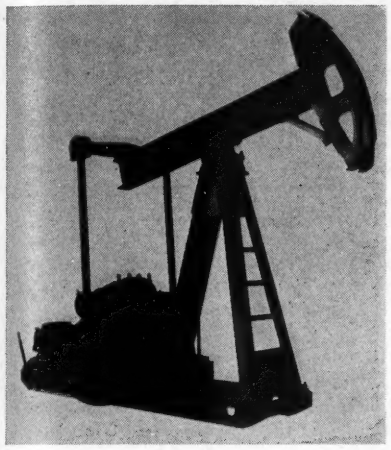
Republic Supply Co. Making Pumping Unit

THE TWIN CRANK pumping unit shown in the picture was developed and placed on the market a year ago by Republic Supply Co. of California, after a considerable period of study and investigation as to the necessary features that go into the making up of a satisfactory unit.

Three sizes have been developed, one



for 12,000-pound polished rod loads, one for 15,000-pound loads, and one for 20,000-pound loads. The first can be furnished with strokes of 24, 36, and 48 inches, the second with 36, 48, and 60 inches, and the third with 36, 48, 60, and 72 inches. All units have double reduction helical gear boxes and are of welded construction, with a choice of outboard power mountings or power mounting inside the A-frame of the Sampson post.

One feature that leads to longer life through efficient lubrication, and through reducing wear by preventing the entrance of dust, is the sealing of the self-aligning roller pitman bearings after they have been packed in grease. This construction obviates the necessity of lubricating the bearings more than three or four times a year. The Sampson post bearing is bronze bushed and oil immersed.

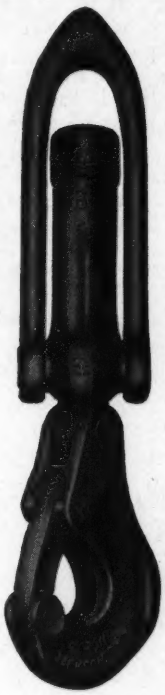
Another feature of the unit is the provision, by simply removing one pin, for dropping the horse head out of the way below the walking beam when the well is being worked on. By removing one additional pin, the horse head can be completely removed, its removal and replacement being but a matter of a few minutes.

■ ■ ■

M. O. Johnston, of the M. O. Johnston Co., returned the other day from a business trip to Texas.

New Locking Arm Adds Safety to Hooks

TO MEET the necessity for handling tubing safely, rapidly and economically, several improvements have been made in the design of the BJ Tubing Hooks manufactured by the Byron Jackson Co. By means of a "Locking Arm," these new hooks are said to eliminate the hazard caused by the flexing of the lower portion of an open end hook which occurs when any weight is being carried.



This Locking Arm is a "built-in" feature of the hook and is not merely added on. When open it extends forward from the bill of the hook member to act as a guide for picking up the elevator links, after which it automatically closes and locks as the links seat in the hook and the load is picked up. It then offers a dual safety feature. It joins the bill of the hook to the body and forms a C-link which prevents the repeated flexing that tends to produce metal fatigue and possible crystallization of the lower portion. It also prevents the links from jumping the hook and thus endangering the operator.

The locking arm mechanism is completely enclosed in the hook. The releasing lever is also enclosed in a recess in the back of the hook at the proper balance point to provide ease in handling. The locking arm cannot open under load since, in addition to being latched, the inner end is held down by the elevator links.

The BJ Tubing Hooks are made in three sizes—the "30", the "50" and the "75". These designations indicate the safe load capacity in tons with a safety factor of three based on the elastic limit of the material. All sizes are equipped with a large ball bearing which acts in conjunction with the trunnion and the main bearing to provide a universal joint action. In the "50" and "75" sizes, a powerful tempered relief spring is entirely enclosed in a heavy housing, and will lift a stand of tubing clear of the collar, thus preventing damage to threads and aiding to speed up operations.

Data sheet showing design and construction as well as full details will be gladly furnished by the manufacturers.

■ ■ ■

Cox Visits Los Angeles

Ora C. Cox, manager of the forged steel union division of Youngstown Sheet & Tube Co., is stopping in Southern California for a couple of weeks on a combined business and pleasure trip.

While here, Mr. Cox is visiting the refineries, gasoline plants, and oil fields, with the representatives of Tunnell, Wood and Neilan, Inc., demonstrating the advantages of the Youngstown handle-bar and petro-forged steel union.

■ ■ ■

Republic Issues Bulletins

Republic Steel Corp. has just released a new series of booklets on Enduro stainless steel. These booklets, five in number, explain the reasons for the rise in popularity of stainless steel and illustrate many of the more important applications of Enduro. Detailed descriptions of the properties of the thirteen principal types of Enduro are included, as well as many illustrations of the various mill operations necessary to produce stainless steel. Copies may be secured upon application to Republic Steel Corp.

Sunset Oil Co. Plans Extensive Leasing, Drilling Campaign After Reorganization

HAVING NEWLY reorganized both land and production departments, Sunset Oil Co. is launching an aggressive leasing and drilling campaign scheduled to increase the company's production of crude oil materially.

James Hardy Lewis, who was connected with the Associated Oil Co. for 17 years, and who has been president of Sunset since Jan. 1, 1935, is in charge of the program of expansion. Geo. H. McCarthy now heads both land and production departments for Sunset, while Donald R. Thompson, formerly with Richfield, is now chief geologist for the company. L. C. Lamp, at one time connected with Associated, is general field superintendent and A. G. Thompson, who was with Shell for 13 years, is now assistant superintendent and manager of the materials department.

Sunset plans to maintain a vigorous drilling program, and intends to keep at least two strings of tools running at all times. Production in recent months has risen some 20-25% and the future policy of the company will be to build up this figure through systematic development of proven fields as well as by prospecting for oil in wildcat territory. Both methods of prospecting will find a place on Sunset's program.

The company is now developing the Lupie lease at Wilmington. Lupie No. 1 was scheduled to be put on the pump for a production test last Friday, and Lupie No. 2 was to have been spudded in on the same day. Lupie No. 1, which is the well begun by Charles Behr, is bottomed at 3296 ft.

Sunset has purchased in fee a 42-acre tract, known as the Beverly Ranch, located on Maricopa Flat. This property is located in the nw¼ sec. 6, 11n-23w. At the present time there are three wells on the property producing a total of about 2500-3000 bbls. of oil per month, and it is Sunset's intention to drill three or four more.

Wildcat Plans

In the Poso Area, Sunset has purchased government permits in sec. 4, 28-28, which cover about 400 acres. Sunset expects to sink a wildcat on this property.

A further wildcat is planned on what is generally known as the Hacienda Ranch, which covers about 16,000 acres on township 24s, range 20-21-22e. Sunset plans early development of this region.

Near Piru, another wildcat is drilling on the Camulos Ranch. This well was suspended last Wednesday at 3176 ft. when it drifted to the northeast and struck a fault, which, according to the known geology of the region, had no right to be there. The well has been turned around and headed southwest, but will remain temporarily inactive until a more complete geological survey of the region can be made.

James Hardy Lewis
President

Sunset Oil Co. new bulk plant near Washington and Alameda Streets.

Texas Operations

Sunset is also operating in Texas, under the name of the Marine Corp., with headquarters at Dallas. D. C. Dunn is Texas agent for the corporation, and the company's production is at Corpus Christi.

In addition to prospecting new territory, and drilling new wells on more established locations, the company is attempting to increase production from proven areas by re-entering old wells and improving their mechanical condition. Sunset is going into old holes, cleaning them out, reperforating, testing new zones, and trying all the other tricks of the trade in an effort to coax a little more oil out of the ground.

New Bulk Plant

The company's activity has not been confined entirely to the production department. The marketing division has also been active. A new

Geo. H. McCarthy
Manager Production Dept.

bulk plant is nearing completion on a four and one-half acre site between Sixteenth St. and Washington Blvd., Alameda and Santa Fe Sts. This plant has a storage capacity of approximately 750,000 gallons and anticipates the needs of the company for many years to come. The company's oil canning, formerly done at the Date St. plant, will now be concentrated at the new plant. Incidentally, this plant is said to be one of the safest in California.

Sunset maintains a marine terminal and loading docks at Wilmington, Seattle and Portland. The local terminal, located on Mormon Island, has ample capacity for docking and loading two tankers at a time, and a loading capacity of about 12,000 bbls. per hour. In Seattle, on a 4½-acre site, the company's marine terminal has a storage capacity of 160,000 bbls., while the capacity of the Portland terminal is about 125,000 bbls.

In the northwest, the policy has been to handle only refined products, gasoline, fuel oil and distillates.

L. C. Lamp
General Field Superintendent

Potential Whipstock Site

The Hollister ranch, western Santa Barbara county, where the 101 Oil Co. is about to drill a well-defined structure trending the usual northwest and southeast, lies right along the ocean front with plenty to indicate the probability of a submarine field abutting. Should Proposition No. 4 be adopted by the voters this week the 101 Oil Co. as the lessees of the owners, will be entitled to develop all oil under the adjoining tidelands by whipstock drilling.

■ ■ ■

Superior Down 7000 Ft.

Superior Oil Co. is down to around 7000 ft. in its wildcat a short distance east of Loyola University.

Squaw Flat Well

L. C. Gould of Hollywood and associates plan immediate drilling at Squaw Flat north of Sespe Canyon, Ventura county. A few years ago they subleased this property, which they had held for a long time, to Rogers & Sullivan, operators and drillers, who put down one or two wells. Then Mr. Sullivan was killed in an automobile wreck and the venture was dropped. Mr. Gould drilled last year in the Grapevine area.

■ ■ ■

Shell Oil To Curtail

Shell Oil Co. intends to curtail drastically in many of its wells throughout the state when it makes a flow test in its new well in the Ten Sections oil field.

Maritime Strike Not Affecting Tankers

SO FAR THE BIG maritime strike has not affected the tanker service. Since the last trouble non-union seamen have been generally employed and no recognition has been accorded the union. There is nothing as yet to indicate that the tankers are going to have any trouble. However, if later there should be a tie-up, the companies marketing in the northwest are well prepared to stand the siege, having loaded up their tanks with supplies. The only immediate trouble for the oil companies in sight is what will inevitably happen to the market if other industries are to be paralyzed for any length of time.

Foreign tankers are arriving and departing without delay, thus maintaining the export trade, but they can not ply in coastwise traffic.

Owners of other ships which are affected by the strike have laid their boats up and announced that they will not employ strikebreakers or try to operate at present. Under these circumstances fewer strike pickets have been placed at the docks.

■ ■ ■

Doyle Well To Pump

Doyle Petroleum Co's well, sec. 15, 25-27, Jasmine district, Quinn ranch, Kern county, is to be pumped after having bailed an estimated 25 bbls. per day, clean oil. The depth is 2882 ft. to which point it has been plugged back. Fifty-three feet of perforated liner has been run into the hole.

Doyle's lease is one obtained through the 101 Oil Co. with which the area has been checkerboarded, so that each will share in any new field that may be developed.

On sec. 20, 25-27 the Hall-Baker Co. has a corehole down to some 2500 ft. testing the possibilities of the area.

■ ■ ■

Signal Profit Sets Record

Signal Oil. Co. reports net profit for the first nine months of 1936 greater than for the full year of 1935 or for any other full year since 1929. Profit after all charges but before provision for federal surtax on undistributed profits amounted to $648,743, or $3.50 per share on both A and B shares.

Operating income before charges for the nine months totaled $1,397,648.

Runkle Resigns From Ideco

C. G. Runkle, president of the International Derrick and Equipment Co. of California, has resigned from the company, effective Oct. 31, to accept an executive position with an eastern concern.

Mr. Runkle was a vice-president of the International-Stacey Co. and has been president of Ideco of California since 1932. It was under his leadership that the company built its California plant, and greatly expanded its California activities.

In connection with his resignation from the company, Mr. Runkle says that one of the most difficult features is the necessity for his moving to the east from California, where he has built up many splendid friendships during the past four years.

■ ■ ■

Edna Land Leased

Malden Oil Corp. has leased 63 acres in the old Edna field and will recondition two old shallow wells and may later drill others. This area produces oil of 15 gravity and is all used for asphalt and road oil. M. D. Allen is president and superintendent. Richard Atkinson is vice-president and treasurer; E. M. Roberts, secretary.

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